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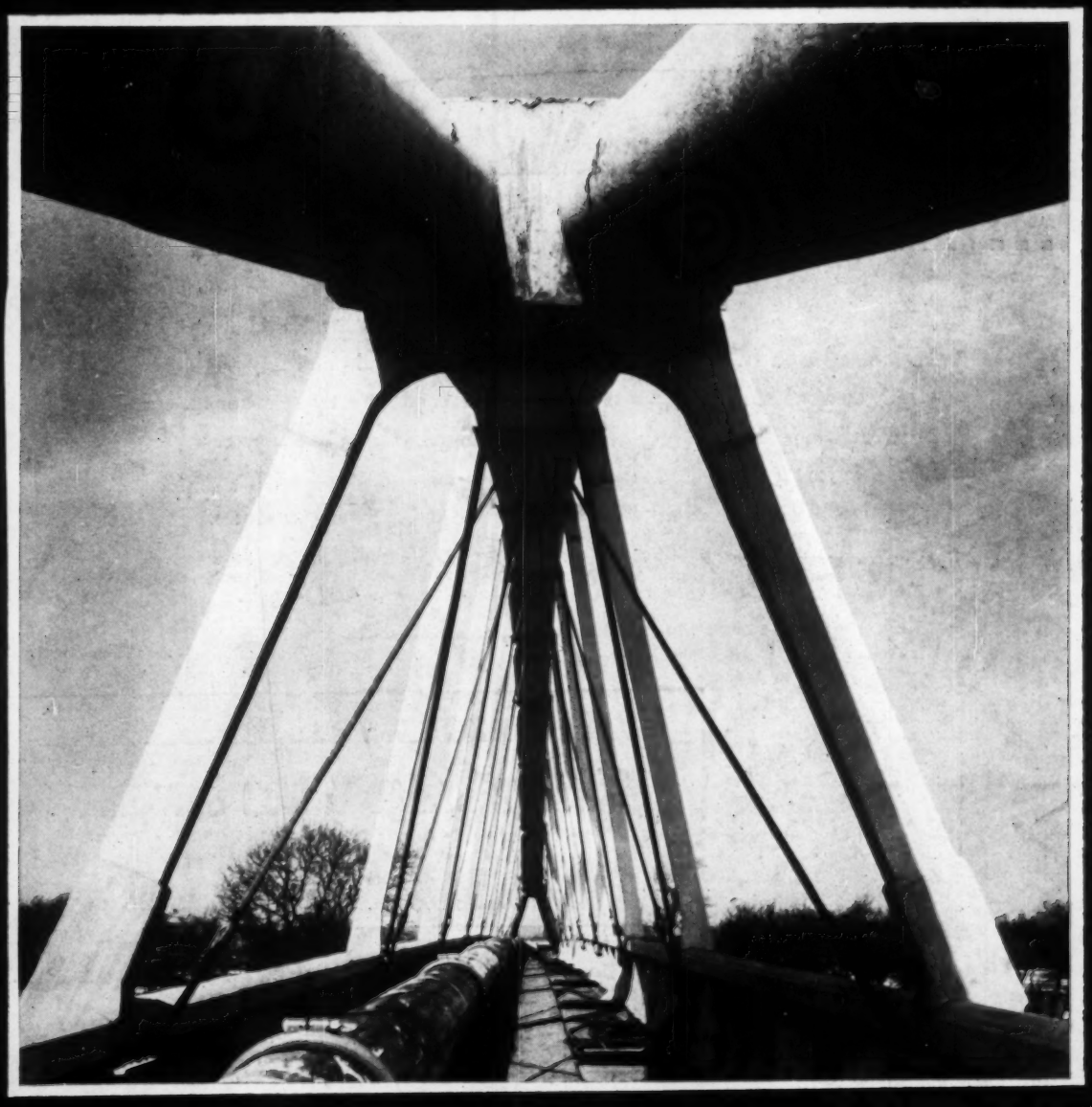

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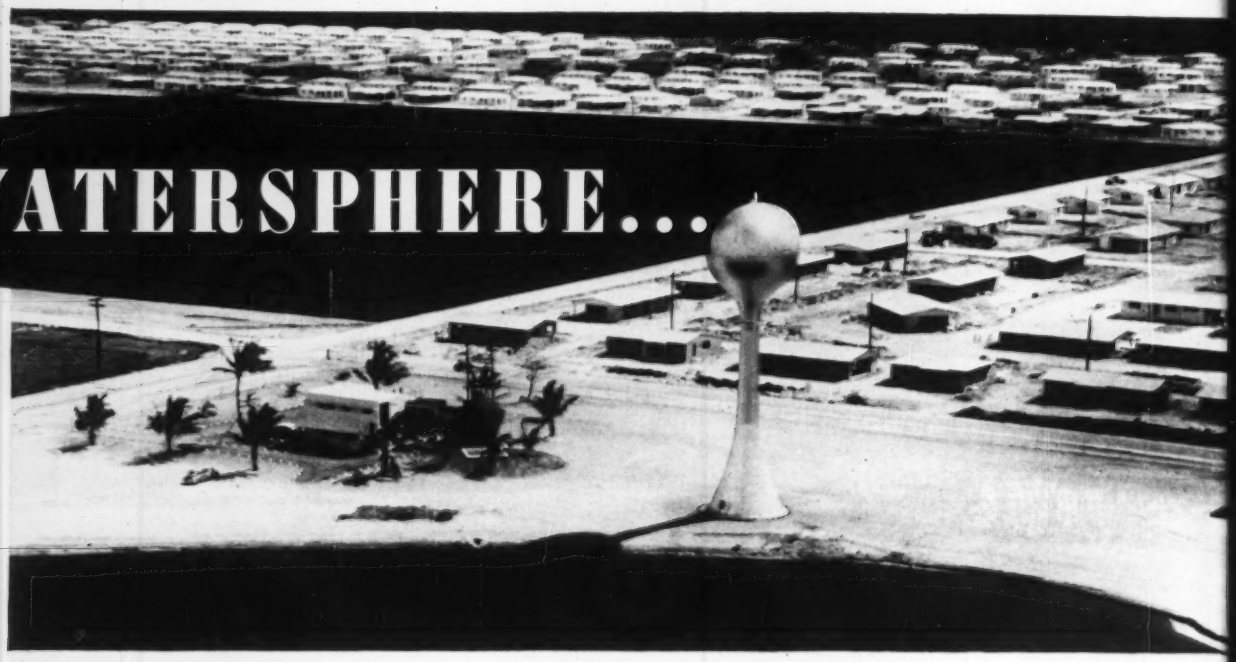

WATERSPHERE...

...in a Florida Housing Boom

The view above pictures one of the first sections of Carol City, Florida, a new 10,000 home suburban community near Miami. Carol City is a self-contained community with its own sanitation and water treatment plant. Included in the municipal water system is the 150,000-gal. Horton Watersphere® shown in the foreground above, to provide an elevated water supply that will help meet peak loads and maintain uniform water pressures. Horton Waterspheres are built in sizes to 250,000 gals. Other Horton elevated tanks are built in capacities to 3,000,000 gals. Write our nearest office for further information.

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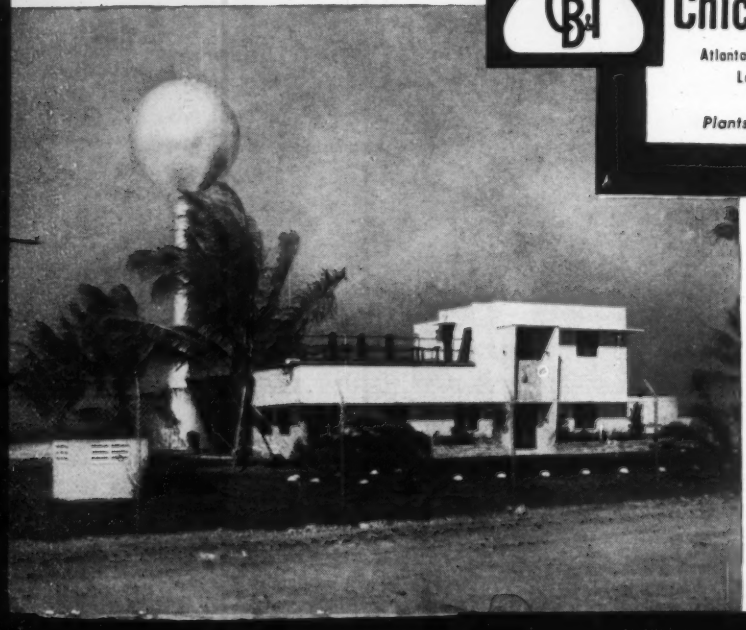


Left: Carol City Sewage Treatment Plant. Left rear is the 150,000-gal. Horton Watersphere.

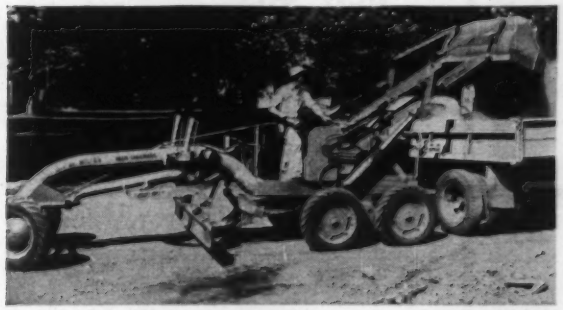
Handle all these Jobs

WITH THE VERSATILE LOW-COST

Model D Grader

With original cost but one-third that of a large grader, low operating cost and almost unlimited versatility, the Allis-Chalmers Model D Motor Grader is helping communities cut costs on a wide variety of jobs.

MORE MAINTENANCE PER TAX DOLLAR — You can have three Model D's for what one large motor grader would cost . . . maintain three times as many miles of road . . . keep your roads in good condition *all* the time.



ONE-MACHINE STREET DEPARTMENT — The versatile Model D with ⅝-yd, rear-end loader rough grades, spreads gravel, cleans up, loads trucks . . . gives many communities a one-man, one-machine street department.

CUTS EQUIPMENT INVESTMENT — Low original cost, low operating cost make the Model D today's biggest motor grader value. Compact and maneuverable, the "D" is a natural for close-quarter work.

KEEPS SHOULDERS SAFE — Model D shapes shoulder, blading windrow next to edge of pavement where rear wheels compact gravel . . . rear-mounted blade feathers out windrow . . . to keep shoulder safe and well-drained, *all in one pass.*

8,800 lb
50 brake hp
POWER-CRATER Engine
Leaning Front Wheels*
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Optional Equipment

POWER-CRATER is an Allis-Chalmers trademark.

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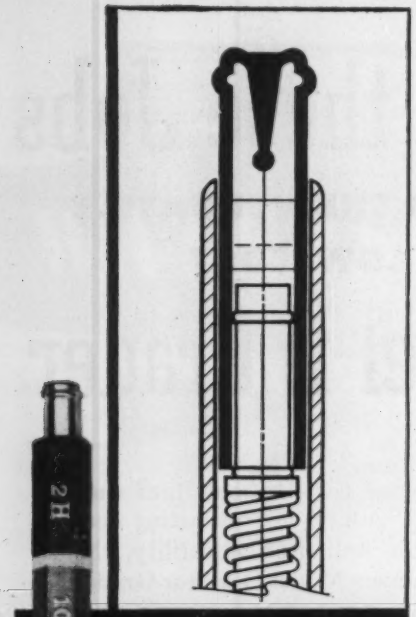

something new on

MARS

Staedtler has been coming up with something new in pencils ever since the first Staedtler pencils were made three centuries ago.

Now it's the new, sturdy, solid brass lead sharpener built into the Technico Mars-Lumograph push-button lead holder. Saves you work, time, money.

Get the imported Mars Technico lead holder and leads today—they are the best, yet cost no more.

The 1001 Mars Technico clutch mechanism holds leads securely; light in weight, perfectly balanced; $1.50 each, less in quantity.

1904 Mars-Lumograph leads are so opaque, inking-in is unnecessary; won't flake or smudge, give better reproduction. Perfectly graded in 18 degrees—EXB to 9H; $1.20 doz., less in quantity.

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Robert F. Boger
Publisher

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LOAD

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LOAD economically with the new Barber-Greene 550 Windrow Loader.

LOAD rapidly up to 4 cu. yds. per min. of earth, sand, loam or similar material, even leaves, or load snow up to 7 cu. yds. per min.

LOAD continuously at capacities that keep ahead of all trucks normally available.

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WRITE for INFORMATION

descriptive literature . . . sound movies

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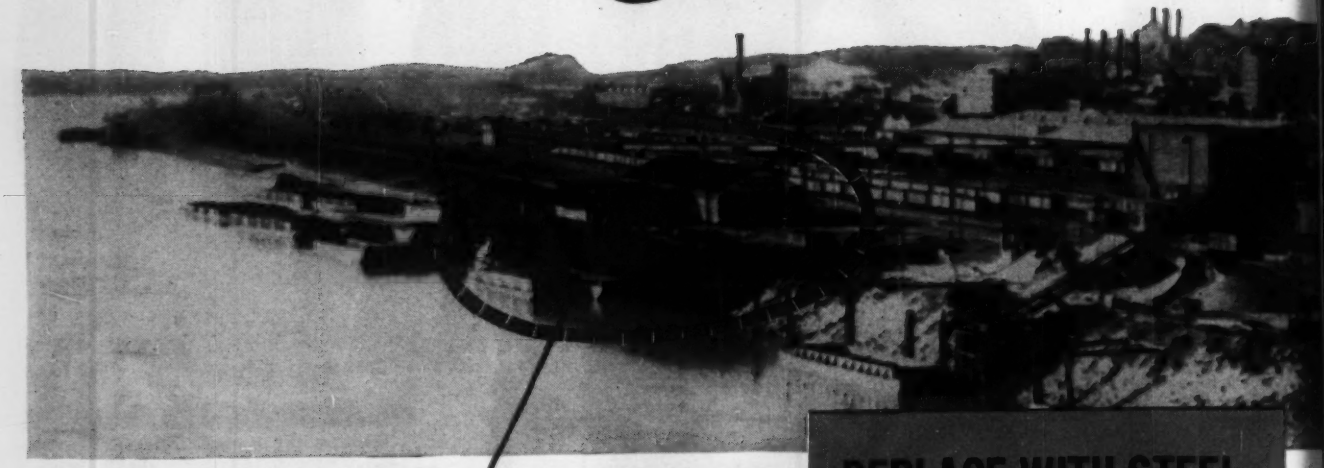
This busy old St. Louis dock given new life with



REPLACE WITH STEEL

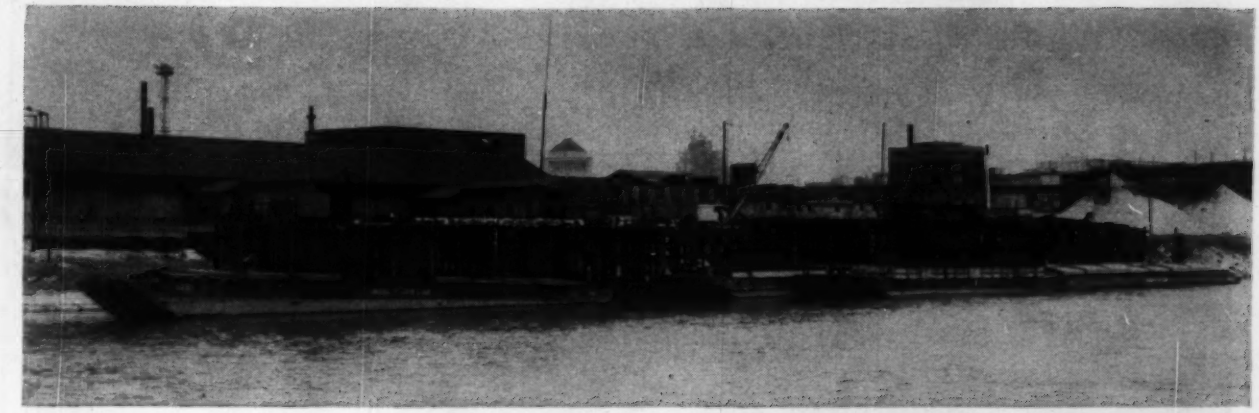
once and for all!

Time and weather beaten, the old dock above with its wooden piling, at left, cost the owners a pretty penny in maintenance until replaced with long-lasting, *trouble-free* USS Steel H-Beam Bearing Piles, as shown at the right. If you have a similar upkeep problem, why not consider the advisability of modernizing your piers and docks with these more permanent steel piles.

On large jobs and small—under piers, docks, buildings, bridges and viaducts, these strong, easily driven H-Beam Piles have proved their ability to provide a secure means of carrying foundation loads into stable mediums lying at great depth. Their capacity for high unit loads, both vertical and horizontal, permits fewer driving operations for a given load. USS Steel H-Beam Bearing Piles are easy to splice, eliminate jetting, and withstand rough handling.

BELOW: The old wooden floor of the dock was replaced with serviceable USS Multiplate Steel Floor Plates.

USS Steel H-Bearing Piles



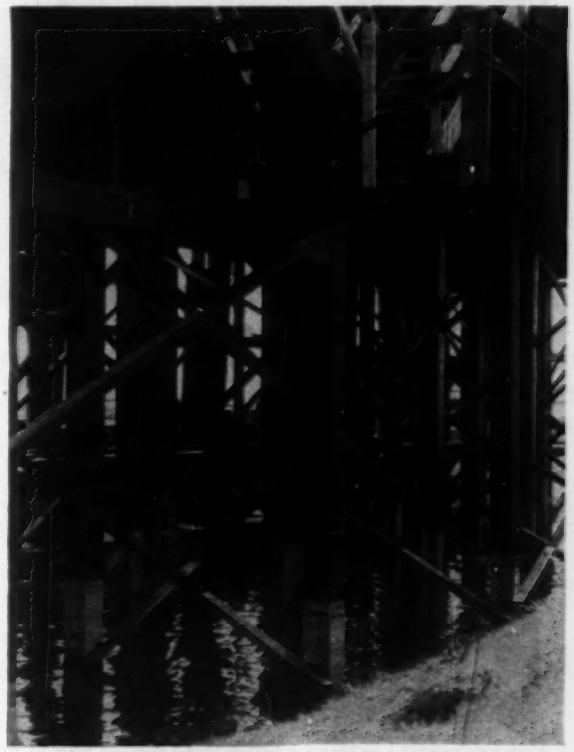
Mississippi Valley Barge Line figures new steel foundation for this important pier will pay for itself in about 20 years!

Time, weather, and the erosive waters of the turbulent Mississippi made maintenance of this important old St. Louis pier a costly proposition. Frequent repairs interfered with the profitable operation of this normally busy, and often crowded, dock.

Finally fed up with such periodic inconveniences, its owners, the Mississippi Valley Barge Line Company, decided to replace the original wooden piles supporting the 195'6" x 40' dock with steel bearing piles. They figured that the permanence of steel would prove more economical than wood when pro-rated over a 20-year period.

The modernization job was done by Massman Construction Company, Kansas City, Missouri, who chose USS Steel H-Bearing Piles for the heavy-duty foundation. One hundred and sixteen tons of CBP-124 (12"—53#) steel H-piling in lengths of 60' and 70' were used to support the rebuilt dock. The new steel piles were driven to refusal at a depth of about 35' into coarse sand and gravel.

The company also replaced the old timber flooring with USS Multigrip Steel Floor Plate. The resulting improvement is a sturdier, longer-lasting dock—one that will more than pay for itself in the practically maintenance-free service it gives.



SEE THE UNITED STATES STEEL HOUR. It's a full-hour TV program presented every other week by United States Steel. Consult your local newspaper for time and station.

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USS Steel H-Bearing Piles USS

UNITED STATES STEEL

Pumpcrete® flexibility proves economy on new Florida hotel

Here you see the Pumpcrete machine being charged by a truck mixer. You can locate Pumpcrete anywhere—it is convenient to your concrete source. Note, too, that other trades can keep right on working, undisturbed by the pipeline or placing operations.

Working on the new Fontainebleau Hotel in Miami Beach, Taylor Construction Company, Miami contractors, placed concrete for all foundation pile caps with Pumpcrete—the pipeline placement method.

T. Lotterman, Taylor Construction Company manager, reports: "Because of Pumpcrete's wonderful flexibility, we were able to pour all pile caps in a short time with minimum handling, in spite of the vast expanse and layout of the hotel."

The photograph at left shows how the Pumpcrete® machine located for easy charging by truck mixers, piped concrete direct to forms with a small crew. Note how the pipeline is supported on sawhorses. After each pour, the light pipe sections are quickly and easily laid to the next form—no runways, ramps, buggies or chutes were needed!

The flexibility and speed of placing concrete by pipeline is clearly demonstrated on this new hotel. Why not put these cost-cutting advantages to work on your next job? Pumpcrete is the logical way to save money on all kinds and sizes of jobs. See your Rex Distributor or write CHAIN Belt Company, 4633 W. Greenfield Ave., Milwaukee 1, Wisconsin, for complete details.

THE SUN'S HEAT AND GIANT REFLECTORS may convert cosmic energy into power that will propel space ships to distant planets.

100 years from now...

WE MAY "SIGHT SEE" ON MARS

A century from now, when undreamed-of marvels transform our way of life, civilization will still rely on one familiar public servant: the cast iron pipe laid today will continue to carry water and gas to the homes of the future.

Proof? 69 American cities and towns are still using cast iron water and gas mains over a century old. And today's modernized cast iron pipe . . . centrifugally cast and quality controlled . . . is even stronger, tougher, more serviceable.

U.S. Pipe is proud to be one of the leaders in a forward-looking industry whose service to the world is measured in centuries.

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A WHOLLY INTEGRATED PRODUCER FROM MINES AND BLAST FURNACES TO FINISHED PIPE.

control seepage due to joint-separation or joint-movement!

Now — by the makers of Labyrinth Waterstops — a new CELLULAR WATERSTOP! Designed with three concrete gripping ribs plus a triple-cell structure, CELLULAR WATERSTOPS permit one side of the joint to move up, down and sideways in relation to the other side . . . keeps joints watertight in spite of separation or differential movement. And, what's more, the joint-protection of vinyl plastic CELLULAR WATERSTOPS far outlives that of any other waterstop. That's because CELLULAR WATERSTOPS last as long as the concrete itself; rust, rot, acids, alkalies, chemicals and atmospheric conditions *can't* hurt it. CELLULAR WATERSTOPS can also be used in conjunction with preformed expansion-joint fillers.

Find out more about this and other job-proven vinyl plastic waterstops made by Water Seals, Inc. Send coupon below.

Made by the makers of LABYRINTH WATERSTOPS . . . the standard waterseal on outstanding construction jobs everywhere — eliminates seepage problems . . . simplifies form work.

Made in Canada for J. E. Goodman Sales Ltd., Toronto, Ont.

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Without obligation, please send me information on your CELLULAR WATERSTOP.

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COMPANY_____

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READER COMMENT

Liked School Report

SIR: In your May 26, 1955, issue of Engineering News-Record, you have published a Staff Report on Schools, which we believe to be the most comprehensive, informative and unbiased article on schools ever published.

Especially interesting is your tabulation of school contract prices, by zones. We, as architects, so often are confronted by low school costs in other areas, which seem out of line with our school costs, that it is difficult to explain the reason to some school boards. Your article will be of tremendous help to us, as well as a guide.

Congratulations on a very excellent article.

HOWELL LEWIS SHAY AND ASSOCIATES
Architects and Engineers
Philadelphia

SIR: May I commend your staff people for a comprehensive and well done job in analyzing the school building program from determination of the needs thru to selling the program to the people. From personal experience I know how important all of the points covered are to a successful building program.

HERBERT H. PECKHAM
President
Delaware Congress of Parents & Teachers
Wilmington

SIR: As a school architect, I feel that your issue on Schools is unsurpassed by any previous survey on school data by any publication.

HERBERT E. KELLNER
Architect
San Antonio, Texas

SIR: I have just read the May 26 issue of Engineering News-Record, which deals with various phases of public school administration. May I take this opportunity to commend you on this issue and the valued information contained therein.

HAROLD G. FEARN
Superintendent of Schools
Aurora, Ill.

SIR: The report was read by members of the staff and all are in agreement that it is a splendid report on the school situation.

NORMAND O. POTHIER
Senior Civil Engineer
Division of Planning
The Commonwealth of Massachusetts
Department of Commerce

SIR: We were very much impressed with the thoroughness of the "Staff Report on Schools," which appears in the May 26 issue.

I. ALVIN PASAREW
Director
Maryland State Planning Commission
Baltimore

SIR: I have been disturbed for several years about our tremendous expenditures for new school building construction. Similarly, I have had the feeling that we build school buildings to last too long.

In our culture, we seem to feel that a school building should be an edifice for the third and fourth generations to "show them what their grandfathers could do." The horrible examples of school architecture of the 1900's are still in use. How much better it would be to build a good school building at a modest cost to last for a generation and use a portion of the money thus saved in better learning tools and equipment in the class rooms. To be sure, the latter policy would not contribute to community egos but it would benefit boys and girls in the long run.

KENNETH R. DOANE,
Educational Consultant
General School Equipment Co.
St. Paul

SIR: Enclosed is a subscription blank for Engineering News-Record. I would appreciate it very much if you could start my subscription to include the May 26, 1955 issue which contained a very comprehensive staff report on school construction. If there are any reprints available on this school report, I would appreciate having six of them for distribution to our planning commission members.

As chairman of the Naugatuck Planning Commission your staff report on schools has been and will continue to be very helpful.

JAMES F. KISSANE
Division Manager
J. E. Smith and Co., Inc.
Naugatuck, Conn.

SIR: One of your subscribers has given me a copy of your May 26 issue containing a Staff Report on Schools. This report is excellent, and so all inclusive that it will be of great help to the Smithfield Citizens Council, which has recently recommended to the school board the building of four new school buildings.

(*Continued on page 12*)

he knows how to take the whether out of weather!

Weather proof! — How important it is to be able to say: my factory . . . farm . . . ranch . . . city . . . is weather proof. Layne knows how to take the *whether* out of weather. Layne has removed the fear of drought and resulting shortage of water supply for thousands of municipalities — large and small — for leading industries — for farmers and ranchers all over the world.

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New Hampshire's first Sectional Plate Arch bridge begins to take shape. Plates rest directly on poured concrete abutment.

1-Gage plates are hoisted into place, securely bolted with special bolts and washers. Accurately formed and punched plates assure fast assembly.

LOOK WHAT'S HAPPENED TO THE OLD COVERED

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BEALL PIPE & TANK CORPORATION
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WYATT METAL & BOILER WORKS
Dallas, Tex.
Houston, Tex.

Gone is the familiar barn-like canopy. Long gone is the wood construction that served America so nobly through its early days of transportation.

Even in historic New England, these picturesque old landmarks have all but disappeared. Outmoded by today's speed, load and safety requirements, many are being replaced by Republic Sectional Plate Arch Bridges—the modern, economical steel plate structures that assemble quickly and easily.

Highway officials in New Hampshire were so impressed by the many advantages a Republic Sectional Plate Arch Bridge had to offer, they shattered a 300-year-old precedent to erect one at George's Mill. The first bridge of this type construction to appear in the state, it's made of rust-resistant Toncan Iron, further protected by a heavy galvanized coating. Here are some of the advantages that make Sectional Plate Structures so popular in construction work—

1. **A single order covers all materials** — after correct span, length and gage are determined.
2. **All materials are shipped together**—including specially designed bolts, nuts and washers.
3. **No breakage is possible,** either during transit or erection.
4. **Handling is relatively easy.** Four men can lift and carry the heaviest plate.
5. **Erection is fast.** Unskilled labor and a competent foreman can assemble structure in any weather.
6. **Traffic delays are shortened.** Backfilling can start when last bolt is tightened.

The ends of the Sectional Plate Arch, beveled on a slope of two-foot horizontal to one-foot rise, were cut on the job. Backfilling can start before this is completed.

The completed arch has a 24-foot span and a rise of 12 feet and 4½ inches above the top of the abutment. Its bottom length is 107 feet. Extremely strong, bridge will withstand vibration and impact of heavy loads.

BRIDGE

7. Comparative first cost is low. And there's no maintenance expense.

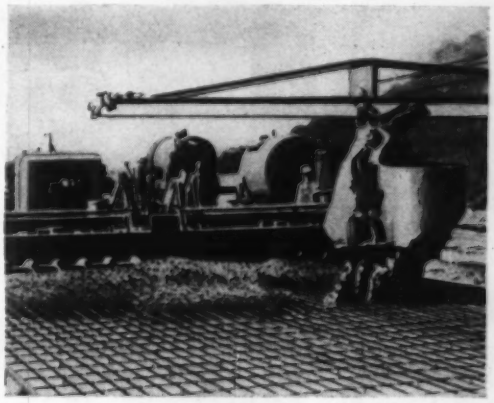
It will pay you to get more information on Republic Sectional Plate Arches. Contact one of the Drainage Products Manufacturers listed on the opposite page for "specs" and engineering data on this and all types of Toncan Drainage Products. For descriptive literature, *mail coupon.*

Here are other Toncan Drainage Products made from Republic Toncan Iron and Republic Copper Steel—

Corrugated Metal Pipe—Perforated Corrugated Metal Pipe—Sectional Plate Pipe—Sectional Plate Arches—Corrugated Metal Pipe-Arch—Sectional Plate Pipe-Arch—CorWel Subdrainage Pipe—Asphalt Coated Pipe—Asphalt Coated and Paved Pipe.

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products



HERE'S SOMETHING NEW IN HIGHWAY CONSTRUCTION! A continuous ribbon of concrete is bound together with these bars fabricated by Republic's Truscon Division, pioneers in reinforced concrete. Designed to allow for expansion and contraction, old open joints are no longer needed. Result: a velvety ride with complete elimination of monotonous thumping.

REPUBLIC STEEL CORPORATION
3114 East 45th Street
Cleveland 27, Ohio

Please send me information covering details on:

- ☐ Republic Drainage Products
- ☐ Truscon® Reinforcing Products

Name_____ Title_____

Company _____

Address _____

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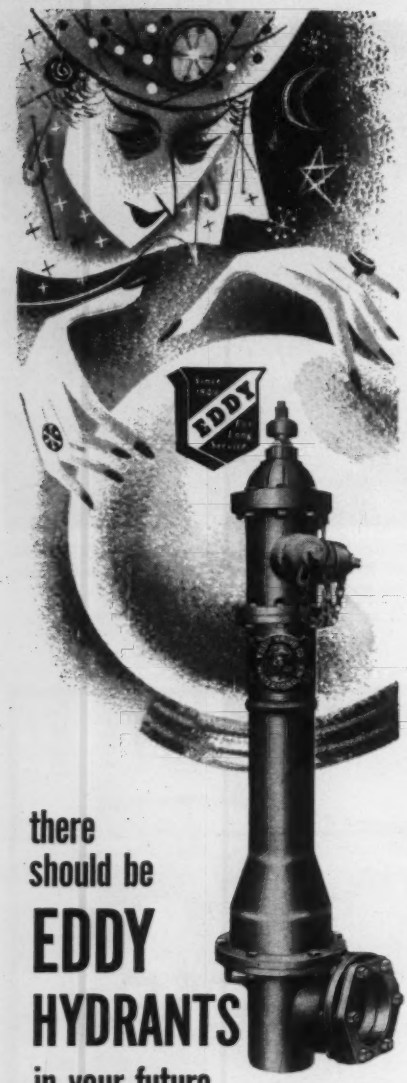

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READER COMMENT

We wonder if it would be possible for you to supply us with twenty-five reprints of your staff report, in order that members of our study committees and building committee may make full use of the information you have compiled.

GEORGE H. COOK
Box 334
Greenville, R. I.

SIR: This is a very fine report and we would like to have it become a permanent part of our files.

R. F. FERGUSON
Henningson, Durham & Richardson
Consulting Engineers
Omaha

Older Collapse

SIR: We are very much interested in your article on p. 27 of the June 23 ENGINEERING NEWS-RECORD describing the collapse of a large grain elevator in Fargo, North Dakota.

As a matter of possible interest to your readers, we are enclosing a photograph of a similar foundation subsidence affecting a grain elevator. The structure in the photograph was owned by the Canadian Pacific Railway Company and inclined to an angle of 27 deg. It is interesting to note that this elevator was successfully righted by the Foundation Company of Canada.

The tilting of these storage silos occurred in 1914.

W. L. ACKER, JR.
Acker Drill Co.
Scranton, Pa.

No Vertical Bars in Silos?

SIR: Referring to the picture of the collapsed grain elevator in Fargo, N. D. (ENR June 23, p. 27), I have tried, with the help of magnifying lenses, to detect the presence of vertical reinforcement in the silo walls. Excepting the jack rods, placed about 10 ft apart, no vertical bars are visible.

Although the failure of these bins could not be attributed to the lack of proper reinforcement, it is high time that the practice of omitting vertical reinforcement, often prevailing, be discontinued.

Even without additional information, the writer considers the described foundation (18-ft long sheetpiles, topped with a 30-in. slab) a rather poor design, because in certain soils such a scheme literally invites shear failure.

Even if there is no state building code in North Dakota, the state has engineering registration laws, so that the designers of this structure can be compelled to explain their assumptions.

PAUL ROGERS
Consulting Engineer
Chicago, Ill.

CALENDAR

Pennsylvania Sewage and Industrial Wastes Association, annual conference, Pennsylvania State College, Aug. 22-24.

American Society of Civil Engineers, hydraulics division, University of California, Berkeley, Calif., Aug. 24-26.

International Association for Hydraulic Research, 6th Plenary meeting, Delft, Netherlands, Aug. 29-Sept. 2.

New York Section, American Water Works Association, annual fall meeting, Saranac Inn, Saranac Inn, N. Y., Sept. 8-9.

Western Association of State Highway Officials, annual conference, Jackson Lake Lodge, Wyo., Sept. 8-10.

New England Water Works Association, Lake Placid Club, Lake Placid, N. Y., Sept. 18-22.

International Road Congress, Dolmabahce and Yildiz Palaces, Istanbul, Turkey, Sept. 26-Oct. 16.

American Public Works Association, congress and equipment show, Milwaukee, Wis., Oct. 2-5.

Federation of Sewage and Industrial Wastes Associations, Ambassador Hotel, Atlantic City, N. J., Oct. 10-13.

Southwest Section, American Water Works Association, San Antonio, Tex., Oct. 16-19.

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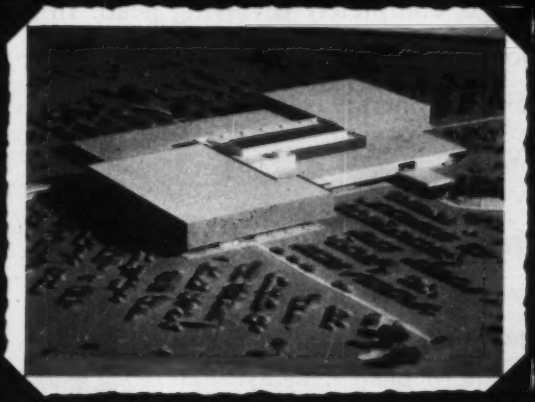

shopping center and housing project

Dayton's $10,000,000 Southdale project

Holcombe, Wis. dam project

Site testing for the Golden Gate Bridge

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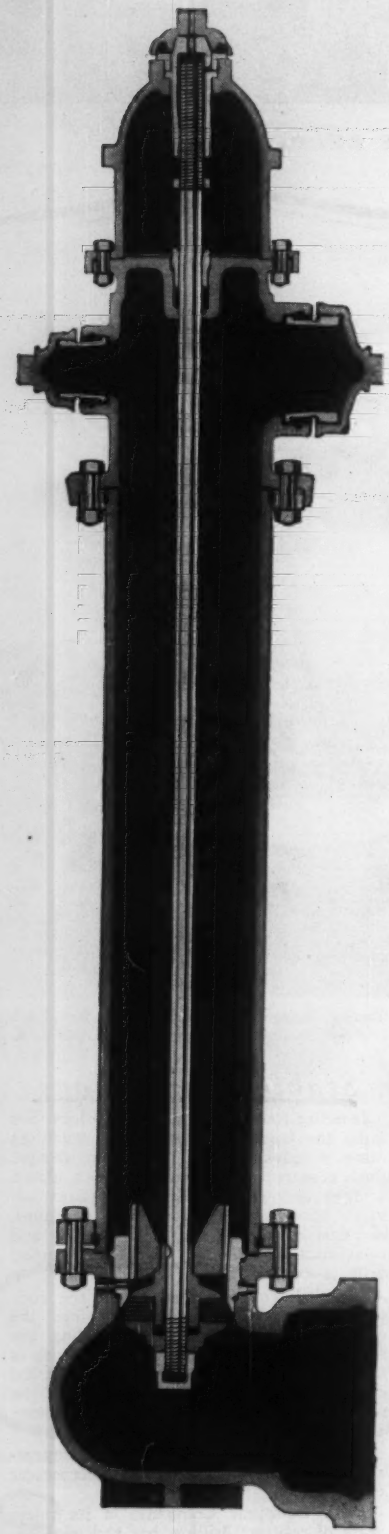

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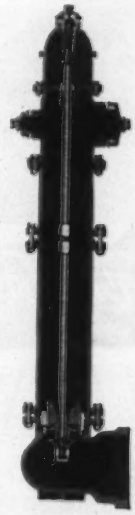

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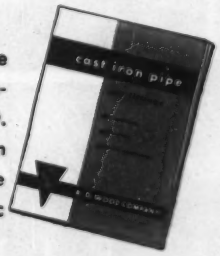

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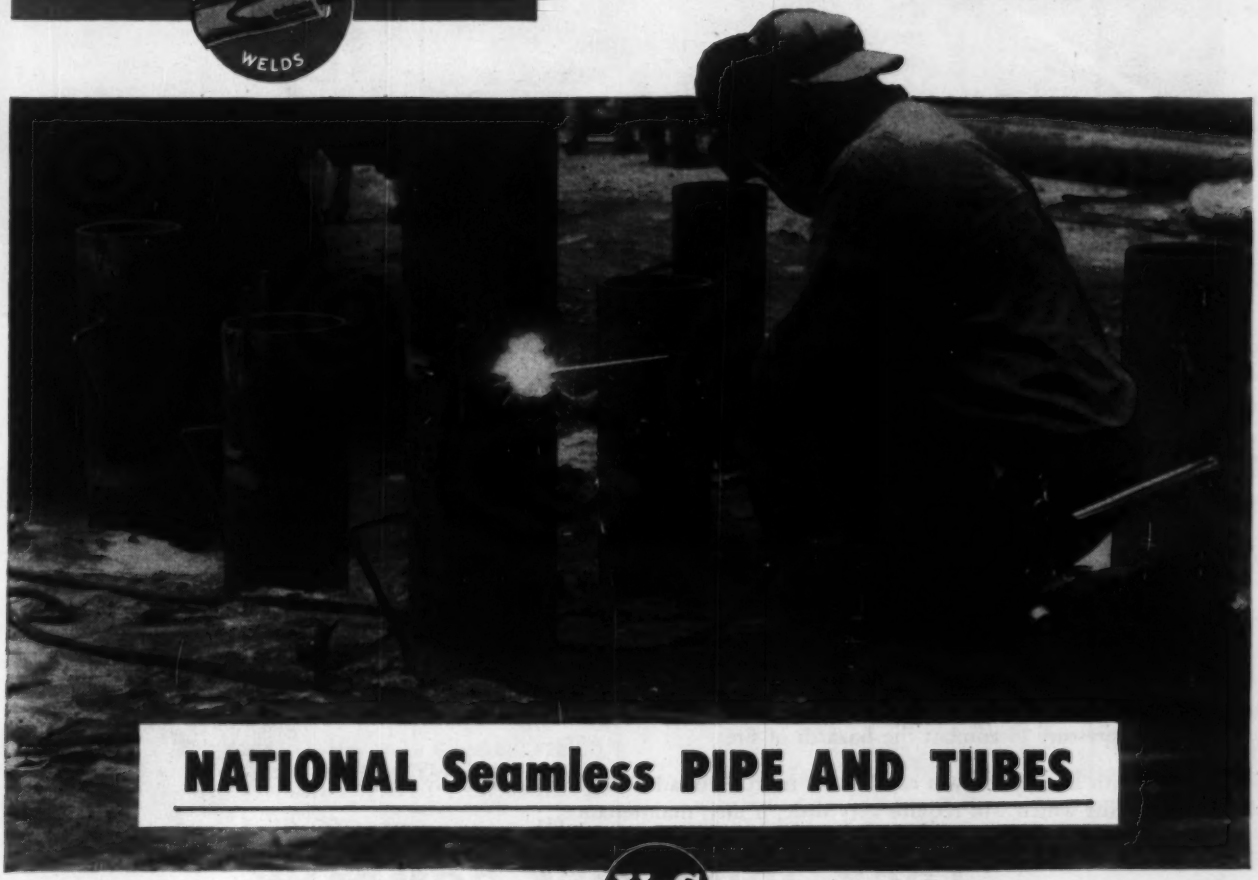

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Back issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Price 35¢ each copy except Annual Cost Issue. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

BOTH KINDER AND TOUGHER—A new California law requires that state highway contracts contain a provision for payment of a bonus for jobs completed ahead of schedule. On the other hand, the state's Division of Highways has just adopted a stiffer policy for penalizing failure to meet deadlines.

Damages now will be determined for each individual project, including estimated engineering costs per day and full consideration of the cost to the public of traffic delays and congestion. The highway division has been following a standard policy of levying an assessment of $100 a day or ordering payment of engineering costs.

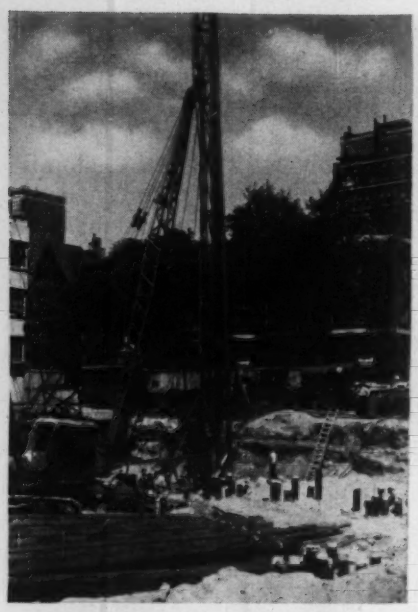
CLEAR SPAN RECORDS—Chicago is bound to have a convention hall that sets a record for unobstructed floor area. The Illinois legislature has made possible one project by creating a Metropolitan Fair and Exposition Authority to build a coliseum for which plans were drawn in 1953. This $34-million structure, which would provide 500,000 sq ft of column-less floor space and would have truss spans of 700 ft (ENR Dec. 10, 1953, p. 25), until last week was in line for the record.

But now, private interests in Chicago have scheduled construction of a building to contain 600,000 sq ft of floor area free of columns. The $17-million steel-arch structure, 600 ft wide, 1,000 ft long and 150 ft high, will be usable as a convention hall, arena, warehouse or auditorium. The entire structure, including steel trussed arches, triangular in cross section, and steel sheets will be bolted. The trusses, on 36-ft centers, will be pinned at supports and crown.

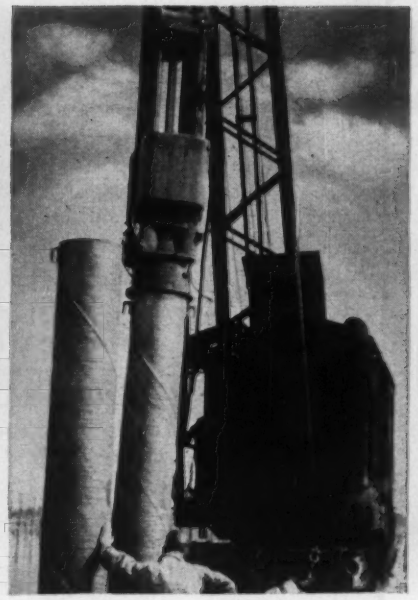
Participating in the latest venture, being financed by a group of Chicago businessmen, are Jay J. Seaver Engineers, a Chicago firm which will provide consulting service, and the Wonder Building Corp. of America, Chicago manufacturer of prefabricated steel buildings, which will supply the steel sheets, arches and other materials. Michael J. McDermott & Co. of Chicago will be the contractor.

REGISTRATION RULING—An Arkansas firm, which manufactures kitchen appliances, has been ordered to drop the word "engineering" from its name in compliance with the state's 1953 engineer registration law.

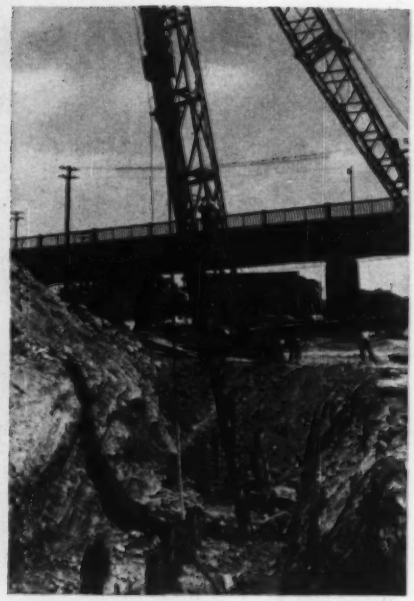
The ruling by a chancery judge was on an action filed by the state's Board of Registration for Professional Engineers against the Graham Engineering and Manufacturing Co. Owner R. G. Graham, who readily agreed to revise the firm's name, explained to the court that he was a graduate engineer but had not represented his firm as being engaged in professional engineering. He said the term applied to engineering in connection with his products.



Driving Armco Pipe Piles for foundation of Chicago apartment building.



Armco Caissons are being used here in rebuilding old railway bridge.



These Armco HEL-COR Pile Shells will support new superhighway bridge.

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	ARMCO HEL-COR PILE SHELLS	8⅝" to 22⅛"	18 to 14 Gage	Up to 60 feet

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WASHINGTON OBSERVER

The Administration has put the damper on $1 billion worth of construction. If the President holds to his dictum that only those new public works projects he recommended in his January budget will be started this year, some 107 dams and other public works projects Congress has voted will be delayed. Congress increased the President's public works recommendations by that much, adding $1.5 billion over the Administration's $300-million new starts program.

The President has the power to do so—by impounding the money Congress voted. Back in 1949 President Truman impounded $800 million in Air Force funds that Congress wanted spent for new airplanes, and this year Eisenhower is setting aside some $46 million Congress voted to increase the size of the Marine Corps.

Congressmen will try to get the President to loosen up some. For example, the only Republican Congressman from Oklahoma, Page Belcher, has been working hard for the $31 million Oolagha Reservoir, and might well be defeated next year if the Administration won't let the water project start. That can be repeated in many another Congressional district.

•

The Administration's housing bill will finally get Congressional approval. There's been a hitch in the House resulting from a fight over public housing. Some Republicans are flirting with the idea of dropping public housing, though it is recommended by Eisenhower, in order to get the remainder through. But Democrats are holding out for the full program, and Speaker Sam Rayburn finally will get the support of the party to act. The bill has already passed the Senate.

•

Federal construction contracts awarded under competitive bidding will be exempt from renegotiation under the new renegotiation law now clearing Congress. The AGC has been seeking the exemption. Such contracts will be exempt—except on Wherry Act housing. The Renegotiation Board is not against the provision in the law, which gives the government the right to recapture so-called "excessive" profits.

•

Bid shopping legislation is blocked for this session of Congress. There is sufficient opposition in the Senate to stop it. So the measure will go over until 1956.

•

School construction legislation is dead for the year, too. The House may get a bill to vote on before adjournment, but the Senate won't.

•

Military construction money is snarled up in a Congressional tangle, brought on by irritation that is almost occupational at the tag-end of a session. The House Appropriations Committee deserted its own legislation, calling for $1.4 billion in new money and $500 million in carryover funds to pay for the projects called for in the new authorization law just signed by Eisenhower.

Rep. Louis C. Rabaut of Michigan, angry because the House Rules Committee had turned down a committee request to let the money be voted even before the authorization law was signed, proceeded to kill all the projects.

So now the Senate will have almost final say on what money will be voted. The House will have to go along with the projects approved, and can only try to eliminate money or reduce amounts for projects the Senate votes. The upshot is that you'll have to wait until the Senate acts before having any idea what projects in the new authorization will get money. The Senate Appropriations Committee is now working on the legislation.

Adams TraveLoader

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For Contractors

Like many other contractors, Gray & Fear, Woodbury, New Jersey, finds several profitable applications for Adams TraveLoader. This contractor says, "We use our TraveLoader on a wide variety of loading operations—loading gravel out of banks for resurfacing operations; loading from stockpiles and for loading surplus trench material on sewer contracts that we have. We particularly like the heavy construction, the good all-around visibility and the high-speed loading ability of this machine" . . . Ask your local Adams dealer to give you a working demonstration of how the TraveLoader will cut loading time and costs—for you!

Here a road contractor uses an Adams TraveLoader for picking up surplus dirt on a road-widening job.

For Counties

The Adams TraveLoader owned by White County, Ark. is used to profitable advantage in reditching operations in the process of maintaining proper drainage on its system of 3,600 miles of roads. County Judge Floyd E. Bradberry, says "Our TraveLoader does an outstanding job of loading surplus ditch and shoulder material and also creek bed gravel. We have found this machine to be readily adaptable to any of our needs. We like its simplicity and ruggedness—it has any loader beat that I have ever seen" . . . See your local Adams dealer for an on-the-job demonstration of the high-speed, high performing TraveLoader.

This county-owned TraveLoader is loading gravel from stockpile for road resurfacing operations.

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Urban Renewal Wins Recruits

Pioneer privately-financed project nears construction, 57 cities have workable programs to reclaim slum areas

The nation has started a move to conserve its cities that is reminiscent of steps taken 50 years ago to conserve natural resources. In the fight against blight, progress was reported this week on at least two fronts.

The urban renewal concept, which was introduced in the 1954 Housing Act, moved a step closer to its first construction project when Housing Chief Albert Cole certified a 10-acre area in Philadelphia as eligible to receive 90% mortgage insurance from FHA for redevelopment by private builders. No federal grants or loans are involved in the Philadelphia project.

And, in another quarter, Commissioner James W. Follin, of the Urban Renewal Administration, reported that up to now 57 cities have qualified for federal aid on new urban renewal projects by putting approved "workable" programs into effect.

Preliminary plans and investigations are under way for these 57 cities. Follin expects to sign the first capital grant contract within six months.

• **Philadelphia project**—The first privately-financed project to near the construction stage is sparked by Philadelphia's builder-sponsors, the Madway Engineering Co., and Bernard Weinberg. They have offered to lease the cleared site from the city, with option to buy, and to build four 18-story apartment houses that would cost some $15 million.

The project hinges on agreement between FHA and the builders regarding the value to be placed, for mortgage purposes, on the completed property. But no long delays are expected because of this negotiation.

The city will acquire the land under the enabling provisions of the Pennsylvania Urban Redevelopment Law of 1945—previously applied with notable success in the rebuilding of Pittsburgh's Golden Triangle and other projects.

Cost to the city of acquiring the land and clearing and preparing it for the redevelopers will be about $2.3 million. Developers would pay $75,000 a year on a lease or buy the land, on option, for $1,675,000. The city will absorb the write-down loss in order to induce valuable tax-paying residential construction in a choice downtown location on the Benjamin Franklin Parkway.

A minor portion of the site is now occupied by commercial and industrial businesses and 54 slum or substandard dwelling units in a total of 71 structures on 60 scattered lots.

Madway and Weinberg have submitted preliminary plans to FHA's Philadelphia insuring office for four elevator buildings containing 882 dwelling units.

Philadelphia has another urban redevelopment project under study that would not involve federal funds. The Southwest Temple Project, to provide minority housing, would receive a $750,000 subsidy from the State of Pennsylvania, but no grants or loans from the federal government.

• **Slum clearance**—In addition to new urban renewal undertakings, there is a big carryover of active slum clearance and urban redevelopment projects initiated under the original 1949 Housing Law.

These "grandfather" projects are in various stages from preliminary planning site clearing and construction up to and including partial completion in eight cities.

Up to June 1, HHFA has earmarked more than $425 million in capital grant funds for 293 approved projects in 194 cities. These allocations used up most of the original $500 million grant money that had been authorized in 1949.

An additional $500 million is to be provided under the 1955 Housing Bill, temporarily tied up in the House Rules Committee but almost certain to pass before Congress adjourns.

Of the carryover projects, 99 have advanced into land acquisition, site clearance or construction stages. Another 93 are in the final planning stage, while preliminary plans are being worked out for 101 projects.

All this adds up to genuine progress, but there's still a long way to go. Best estimate of the total value of potential construction wrapped up in urban renewal was given by Follin at the ASCE's annual meeting.

Basing his guess on the 1950 census figure of 5,000,000 substandard dwellings, Commissioner Follin estimated that total expenditures to renew or rebuild substandard areas would amount to $75 billion.

Of the total, $15 billion would be in public funds for site preparation and area improvements. Roughly $60 billion would be private investment in redevelopment.

"New Look" for Air Academy

Controversy over the architectural concept of the new Air Force Academy to be built at Colorado Springs apparently has forced the designers to give the project a "new look."

After the House Appropriations Committee last week refused to commit funds for the project until "the design is more firmly established", the Air Force was able to create a more favorable climate at a hearing before the defense subcommittee of the Senate Appropriations Committee on Monday.

The Air Force disclosed at this hearing that it has requested Skidmore, Owings & Merrill, architects for the project, to make a substantial reduction of the glass area in their preliminary design. John M. Ferry, special assistant for installations to the Secretary of the Air Force, also told the subcommittee that the particularly controversial chapel design had been abandoned. He said an entirely new concept eventually would be evolved for the chapel.

Ferry, who appeared at the Senate committee hearing with John Merrill and N. A. Owings, representing the architects, asked for restoration of the $79-million appropriation denied by the House. With good luck, he said, the Air Force could get that amount out in contracts before the end of this fiscal year.

• **House committee was tough**—The House Appropriations Committee had not only turned down the request for $79 million in new funds but had forbidden the Air Force to make use of the $15 million already appropriated until the design controversy is settled. It declared:

"The committee and individual members of Congress have received a great deal of adverse comment on the

. . . Air Academy

recently publicized preliminary designs of the academy and feel strongly that it would be most unwise to provide funds for construction until the design is more firmly established."

Air Force officials explained that the models and renderings recently exhibited were merely architectural concepts and that no formal plans have been submitted by Skidmore, Owings & Merrill. They noted that comments were being made by the Air Force to guide the designers in developing their final concepts but that no official action could be taken until formal plans were presented. And, the committee was told, these plans would be studied by a special review board.

But this procedure did not sit well with the House committee. It proposed instead that the Secretary of the Air Force consult the Commission of Fine Arts, which is charged with approving plans for public buildings in the District of Columbia.

Chairman George H. Mahon of the subcommittee on defense appropriations characterized the preliminary designs of the glass, aluminum and steel structures as looking more like a factory than a school. "All the 30,000 soldiers at nearby Camp Carson might be kept busy just washing the windows," he quipped. And, Mahon called the now abandoned chapel more like a "tent of some sort."

However, two Colorado Congressmen answered Mahon by noting that it had already been agreed that glass areas should be reduced and that the chapel design had been withdrawn.

Apparently, the recommendations to the architects disclosed at the Senate hearing on Monday called for further substantial reduction of the glass areas and possibly other exterior alterations.

Questioned by ENR last week prior to his appearance before the Senate subcommittee, N. A. Owings expressed full confidence that his firm's designs will meet all functional and other requirements of a completely "modern Air Force Academy of the future." He said his firm had no apologies to make for its design concepts.

U. S. Military Construction In France Now 45% Complete

Military construction in France is approximately 45% finished, the Joint Construction Agency reported last week in a summary of building activity that has been going on during the past two years.

JCA handles the multi-million dollar building programs of all United States armed forces in France.

Based on "value in place," Air Force facilities are approximately 51% complete, while the Army program is only about 40% finished, the report indicated.

At the end of May, construction was under way on approximately $121 million worth of contracts. Some of this was already in place. The remainder was scheduled for completion to take place in 1955 and 1956.

Of military construction still to be started, 20% was under design in mid-1955 in the Air Force program, while 11% had not yet reached the design stage. Plans are complete for the remaining 69%.

In the Army construction program, 34% was under design at mid-year, 17% had not yet entered the design stage and plans were complete for 49%.

• **Awards to French contractors**—The total value of military construction contracts awarded to French contractors, including design, engineering and inspection costs, overhead and contingency reserves, came to about $150,700,000 during the past two years.

Of this amount, approximately $67,200,000 was spent for Air Force projects and about $83,500,000 for Army installations.

Approve Feasibility Study for Bay Area Toll Bridge

Studies have been authorized to determine feasibility of a toll bridge, or tube across San Francisco Bay from San Francisco to Tiburon Peninsula, Marin County, via Angel Island.

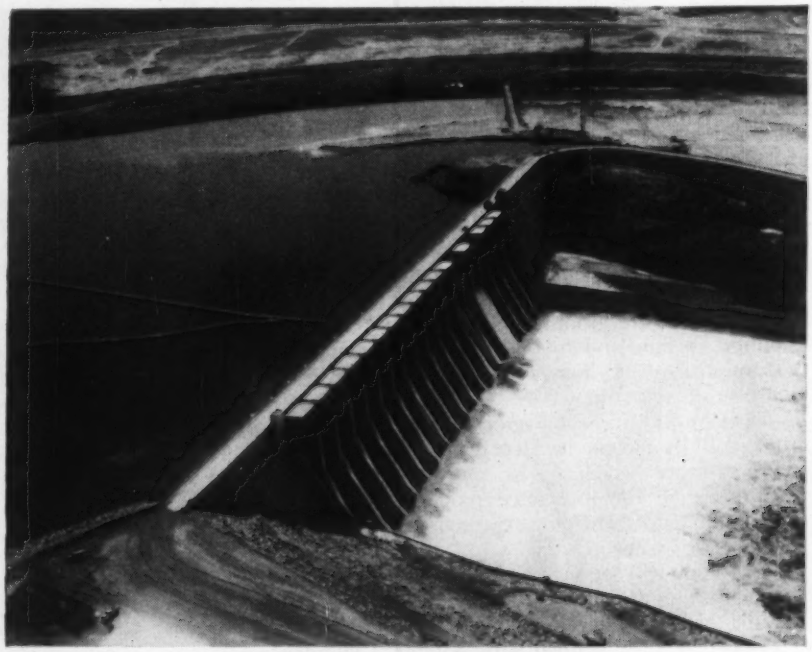
A bill passed by the legislature provided $150,000 for the investigation, but Gov. Goodwin Knight reduced this to $50,000.

Under this legislation, the studies also will include feasibility of financing and construction of rapid transit facilities in connection with the proposed crossing.

Plan Industrial District

Construction will start soon on a $30-million planned industrial district of Pittsburgh, along Penn-Lincoln Parkway West. It will be called Parkway Terminal and is being developed by the Dick Corp. and the Pittsburgh and West Virginia railroad.

Two Pittsburgh architectural firms, Kuhn Newcomer and Schell, Decter & Scott, designed the project which is intended primarily to contain light manufacturing and housing operations.



Intake Structure Completed at Chief Joseph Dam

With the intake structure at Chief Joseph Dam completed to its full 2,034 ft length, the first three main generators, rated at 64,000 kw each, are slated to go on the line Sept. 1. The intake structure has penstock openings for 27 units with a total rating of 1,728,000 kw. Plans call for use of 16 units initially, with others to be added until a goal of 27 is reached.

Main dam was completed in March by Chief Joseph Builders under a $27-million contract. Columbia River Constructors, a nine-contractor combine, has another year to go on construction of the $40-million powerhouse. The $169-million multi-purpose project on the Columbia River near Bridgeport, Wash., is a Corps of Engineers undertaking.

Highway Program

Compromise road measure goes to House this week

The House Public Works Committee this week sent to the floor a proposal for a pay-as-you-build program that would put a total of $48.5 billion into highway construction during the next 12 years. The combined federal-state program will total $46.5 billion. The remainder will be spent on all-federal roads in parks and on forest lands.

New tax levies on highway users will be imposed to help meet the cost of the expanded program (ENR July 14, p. 21).

• **Highlights of the House bill:**

• A 1-cent increase in the federal gasoline tax, to 3 cents per gal., estimated to raise an extra $8.6 billion between now and 1970.

• A 3-cent increase, to 5 cents a gal., in the tax on diesel fuel, estimated to raise an extra $713 million.

• A 10-cent per lb increase, to 15 cents, on truck tires larger than 8¼x18, estimated to bring in $950 million in new funds.

• A 6-cent per lb, to 15 cents, raise in the tax on tubes for these large tires, raising an estimated $45 million in new funds.

• A 3-cent per lb increase, to 8 cents, on truck tires of 7¼x18 to 8¼ x18, yielding $170 million in new funds.

• A new 15-cent per lb tax on camelback used for tires for any purpose, to raise an estimated $624 million in new money.

• A 2% increase, to 10%, in the manufacturers' excise on trucks, buses and trailers, to yield an extra $871 million.

• **General provisions**—The Davis-Bacon Act would apply to highway construction under the new program—meaning the government would have authority to set minimum wage levels, at least as high as the prevailing wage for similar work in project area. The Senate rejected this provision in voting the Gore Bill, and will probably insist on its being killed when the measure goes to conference.

The federal government may, if it desires and if a state requests such action, pay up to 50% of costs of utility relocation required by a highway project. In any event, the maximum U.S. contribution for such relocation can not exceed 2% of the overall cost of the entire project which is what the Senate bill provides.

After House action, the bill must clear two Senate committees.

Here's How New Road Bill Allocates Money to States for Next 12 Years

(In millions of dollars)

State	Interstate System: 1st Year Federal plus State Matching Funds	Interstate System: 12 Years Federal plus State Matching Funds	Other Federal-Aid Roads: 1st Year Federal plus State Matching Funds	Other Federal-Aid Roads: 12 Years Federal plus State Matching Funds	Total 12 Years Federal Funds	Total 12 Years Federal plus State Matching Funds
Ala.	$21.0	$420	$29.9	$428	$601.0	$848
Ariz.	**11.5**	**230**	**12.6**	**180**	**347.1**	**410**
Ark.	16.3	223	22.0	314	367.0	537
Calif.	**131.0**	**2,613**	**67.3**	**960**	**2,956.0**	**5,373**
Colo.	8.8	177	20.3	290	326.0	467
Conn.	**31.8**	**637**	**13.5**	**193**	**670.2**	**830**
Del.	3.8	76	6.2	89	112.3	165
Fla.	**26.4**	**569**	**24.4**	**349**	**686.2**	**918**
Ga.	40.0	802	34.3	490	966.0	1,292
Idaho	**6.0**	**119**	**11.7**	**167**	**214.0**	**286**
Ill.	61.0	1,221	65.0	929	1,564.0	2,150
Ind.	**49.7**	**994**	**35.3**	**505**	**1,148.0**	**1,499**
Iowa	15.8	316	32.1	459	512.0	775
Kan.	**11.9**	**238**	**30.8**	**440**	**434.0**	**678**
Ky.	28.2	564	26.3	376	696.0	940
La.	**28.3**	**566**	**23.3**	**333**	**675.0**	**899**
Me.	8.5	169	11.1	159	232.0	328
Md.	**24.9**	**498**	**15.7**	**224**	**559.0**	**722**
Mass.	48.0	961	26.7	382	1,055.0	1,343
Mich.	**74.3**	**1,486**	**50.4**	**720**	**1,700.0**	**2,206**
Minn.	27.7	553	35.8	511	754.0	1,064
Miss.	**14.1**	**282**	**23.8**	**340**	**424.0**	**622**
Mo.	34.3	687	41.5	594	915.0	1,281
Mont.	**8.7**	**173**	**20.6**	**294**	**325.0**	**467**
Neb.	6.0	121	24.2	346	282.0	467
Nev.	**4.0**	**79**	**8.7**	**124**	**179.0**	**203**
N. H.	3.8	76	6.5	93	115.0	169
N. J.	**77.8**	**1,557**	**27.4**	**392**	**1,597.0**	**1,949**
N. M.	13.1	262	15.5	221	382.0	483
N. Y.	**76.6**	**1,532**	**92.6**	**1,320**	**2,041.0**	**2,852**
N. C.	14.2	283	35.4	506	508.0	789
N. D.	**6.1**	**122**	**17.4**	**249**	**1,234.0**	**371**
Ohio	78.0	1,561	58.3	832	1,823.0	2,393
Okla.	**21.6**	**432**	**28.5**	**407**	**593.0**	**839**
Ore.	17.8	356	18.0	257	488.0	613
Pa.	**43.5**	**871**	**69.2**	**990**	**1,279.0**	**1,861**
R. I.	7.0	141	8.0	114	184.0	255
S. C.	**10.5**	**210**	**19.0**	**282**	**325.0**	**492**
S. D.	5.3	107	16.7	239	232.0	346
Tenn.	**21.8**	**436**	**30.9**	**441**	**614.0**	**877**
Tex.	50.0	1,000	89.7	128	1,540.0	1,128
Utah	**12.9**	**259**	**9.5**	**136**	**361.0**	**395**
Vt.	10.2	204	6.0	86	227.0	290
Va.	**32.6**	**652**	**28.1**	**400**	**787.0**	**1,052**
Wash.	26.5	531	22.2	318	652.0	849
W. Va.	**14.8**	**296**	**16.0**	**228**	**380.0**	**525**
Wis.	18.5	370	33.8	484	575.0	854
Wyo.	**16.4**	**328**	**11.1**	**158**	**420.0**	**486**
T. H.	.....	.....	6.7	95	.....	.....
D. C.	**8.7**	**174**	**8.6**	**126**	**218.0**	**300**
Puerto Rico	.....	.....	10.2	146	.....	.....
TOTAL	**$1,329.7**	**$26,544**	**$1,399.0**	**$18,393**	**$34,350.0**	**$46,494**

Totals may not add because of rounding

Kansas Pike: Both Asphalt and Concrete

Turnpike authority decides to pave 181 miles with asphalt and 55 miles in concrete; first contract exceeds estimate

The 236-mi Kansas Turnpike will have asphaltic concrete surfacing on the 181-mi stretch between Topeka and the Oklahoma border and reinforced concrete pavement on the 55-mi Kansas City-Topeka section.

Availability of materials, costs and soil conditions favored this solution, according to the turnpike authority. Its decision was based on an engineering report plus hearings for advocates of both rigid and flexible paving.

The engineering report was prepared by Howard, Needles, Tammen & Bergendoff, the turnpike authority's consulting engineers. Working with them were Frank Gilmore, Kansas City engineer; C. H. Scholer, Kansas State College professor of applied mechanics; and the State Highway Department.

• **First contract let**—First paving contract was let last week, close on the heels of the paving decision. Covering a 17-mi stretch of asphaltic concrete, it went to McCarthy Improvement Co., Davenport, Iowa, at $3,132,077. This was $122,966 over the engineer estimate. However, the turnpike authority was advised that it was unlikely lower bids could be obtained by readvertising.

Joseph Sorkin, the consulting engineer in charge of the work, told the authority: "There has been a nationwide stiffening of contractors' prices in recent weeks. I feel that if we were just starting our grading and structures they might cost between $3 million and $4 million more than we got them for."

• **Paving specifications**—Asphaltic concrete pavement will be 22 in. thick, built up from grade. This will include a 10-in. subbase layer, covered by 8 in. of waterbound macadam in two 4-in. layers, topped by a 4-in. leveling and wearing course, with a light-reflecting, skid-resistant surface.

The rigid pavement will have a 4-in. subbase laid over grade, with a 1-in. sand leveling course topped by a 10-in. slab of reinforced portland cement concrete.

• **Shoulders for safety**—Although traffic lanes will have a 24-ft width in both directions on the divided highway, drivers actually will be provided a 38-ft surfaced roadway. A 10-ft bituminous shoulder will border the outside of the 24-ft traffic lane and a 4-ft shoulder of the same type will be on the inside.

The 2½-in. thick shoulder strips will be dropped a quarter inch below the main traffic ways to warn drivers when they get off the roadway. The shoulders, however, were designed as safety measures, not for general traffic use. They will be dark surfaced on the concrete section; light on the asphalt stretches.

• **Other features**—Both types of pavement are designed to support a wheel load of 18,000 lb or twice the maximum legal load on Kansas state highways. Combination trucks account for about 10% of the traffic on Kansas interstate routes.

The portland cement pavement will have sawed joints at the end of each slab, with expansion joints only where there is a union of the slab with a structure.

Ohio Legislature

Many measures deal with capital improvements and highway policy revisions

The Ohio legislature overrode 17 of Gov. Frank Lausche's 32 vetoes, including a number affecting public works, before closing shop last week.

One of these items was legislation authorizing construction of a 1,200-car parking facility under the State House grounds in downtown Columbus. A four-member, non-salaried commission will supervise the project, which will be financed by revenue bonds. Ralph H. Burke, Inc., Chicago consulting firm has given the project a favorable feasibility report.

In overriding three vetoes on highway matters, the legislature allowed a 1000-lb tolerance on truck weights without penalty; exempted out-of-state moving vans from the axle-mile tax on trucks using Ohio highways; and provided $80,000 for an audit of the Ohio Turnpike Commission by the state auditor's office.

The assembly overrode the Governor's veto of a law that provides for regular inspection of capital improvements by a legislative "watchdog" committee.

The Governor was sustained in his veto of a measure that would have permitted the Water Pollution Control Board to approve use of septic tanks in villages of less than 2,000 population.

Lawmakers also went along with the Governor in his objection to a law that would have shortened the hitch on tractor-trailer combinations and would have increased the load limit.

• **Port improvements**—To facilitate improvement of Lake Erie ports in preparation for the St. Lawrence Seaway, Ohio legislators adopted legislation to enable cities to set up port authorities to finance needed projects. Provision also was made for transfer of title to submerged lands to riparian owners who have made improvements.

The legislature authorized sale of another $216 million in bonds under a special highway improvement program approved by the voters in 1953. An $82-million issue already had been authorized, with $30 million already sold and another $52 million to be sold shortly.

For capital improvements the legislature voted $43.2 million. This includes $3 million to assist local school districts with construction. It was voted to submit a $150 million program for construction of mental hygiene facilities to the voters in November.

A proposed building code, which would have provided for use of new materials and new standards, failed to pass. Instead, the legislature voted to give the 28-year-old Board of Building Standards more leeway in approving new methods and materials.

Arizona Irrigation Group Seeks Loan for Expansion

After a successful five-year, $6-million restoration program that resulted in substantial savings in irrigation water, the Salt River Valley Water Users Assn. is going after $10 million more in long-term, interest-free federal money to extend the job. In 1950 the group obtained $6 million for rehabilitation of the Central Arizona Irrigation Project. This schedule ends in June 1956.

With funds already received, the association has built hundreds of small and large head gates, lined 7.5 mi of main canals, lined 50 mi of laterals and placed 32 mi of underground tile.

This activity cut loss of water from 36% in 1950 to 32% last year. That 4% represents 48,000 acre-ft, enough to supply 16,000 farms with irrigation water. Association engineers believe that with the additional $10 million, they can cut water losses to 25%.

If the loans are granted, the water users plan to line 15 mi of main canals; line 300 mi of laterals in open fashion; and put 50 mi of laterals into concrete pipe. Altogether, the system has 140 mi of canals and 825 mi of lateral lines.

Yukon Power Plan

August hearing slated on Frobisher application for $270-million project

Another official step has been taken toward creation of a vast hydroelectric and metallurgical empire in northern British Columbia. A formal hearing on an application of the Fobisher-Ventures group for a British Columbia government water license has been scheduled for mid-August in Atlin and Victoria.

The Northwest Power Industries Project, as it is now called, is sponsored by Frobisher Ltd., subsidiary of Ventures Ltd., a Canadian holding company whose interests are world-wide in scope.

Through another subsidiary, Northwest Power Industries Ltd., the organization plans to launch the $270-million development straddling the British Columbia-Yukon border by harnessing waterpower of Yukon River's intricate system of inland waterways, which can be forced to run backward to generate 3,225,000 kw of electricity.

A British Columbia water license is prerequisite to harnessing the watershed, which extends 200 mi north and south and 300 mi east and west. Total expenditure on the over-all hydro and smelting project may reach $700 million.

The federal government of Canada already has granted the group a priority permit under the Dominion Water Power Regulations Act. It is expected now that contracts between Frobisher-Ventures and the British Columbia government will be signed by the end of the year.

• **Surveys show feasibility**—Engineering surveys have proven the feasibility of the project, according to Thayer Lindsley, president of both Frobisher Ltd. and Ventures Ltd., who hope to be able to proceed with Phase One soon.

The first phase involves a dam 4 mi above Whitehorse on the Yukon River. In conjunction with this, a 1-mi tunnel will drain the reservoir into Siliko Lake, while a 10-mi tunnel from the lake will drain the water again into a powerhouse on Nakonake River. This is planned to produce 660,000 kw.

Surveys will continue through this year, at a cost of $550,000. A $2.5-million performance bond has been posted with the British Columbia government by the group as an evidence of good faith.

However, the entire amount is refundable to the company if the government decides not to issue the water license, or if the company abandons the project.

One major point turned up in the engineering surveys is that at any particular stage of development, the capital expenditure involved is proportional to the amount of power to be developed at that stage.

The proposed project has been described by government officials and engineers as "among the major engineering developments in the world today."

Power potential of the project is believed to be twice that of the St. Lawrence Seaway project. The water storage system, next to the Great Lakes, would be the largest in North or South America.

The water could be stored at a 2,200-ft level and dropped through tunnels thus developing a rate of 28,000 fps.

Vertical Street Completed

Vertical Seventh Street, Oregon City, Ore., a 90-ft elevator, has been placed in service after a year of construction that involved interesting engineering and architectural problems. The lift, which carries 3,000 passengers daily, is enclosed in a 129-ft tower, surmounted by an observation platform that overlooks falls of the Willamette River.

A concrete shaft replaces a 41year old wood enclosed shaft that was reached from the bluff by open-deck flying bridge, spanning the railroad. Motor units are mounted in the top portion of the shaft above the observation "mushroom". Contractor was James & Yost, Inc., of Portland.

Power Commission to Open Campbell Dam Bids Aug. 4

British Columbia Power Commission will open bids Aug. 4 for its Upper Campbell Lake Dam to provide water storage for the Ladore Falls and John Hart Developments on Vancouver Island. Construction is expected to be in full swing by the end of August.

Construction will be pushed through the winter months without let-up on the initial $9-million stage. A $10-million second stage is scheduled for completion in 1958.

First stage entails construction of a rock fill dam with concrete spillways, 1,000 ft thick at the base, 2,000 ft long and 75 ft high. Second stage work will increase the height of the dam to 110 ft and include installation of equipment to boost the island's power supply by 52,500 kw.

Garden State Parkway Job Sets Roadbuilding Record

The New Jersey State Highway Department claims it shattered all previous state records for concrete road construction in placing extra lanes for the Garden State Parkway between U. S. Route 22 and the Raritan River.

During a 32-day working period, a total of 27 mi of concrete pavement was laid—13.5 mi in each direction. An average of 5,080 ft of roadway was built each day, as against 1,500-to-1,800 ft, considered "normal". Top day's work resulted in completing a total of 7,980 ft, according to Highway Commissioner Dwight R. G. Palmer.

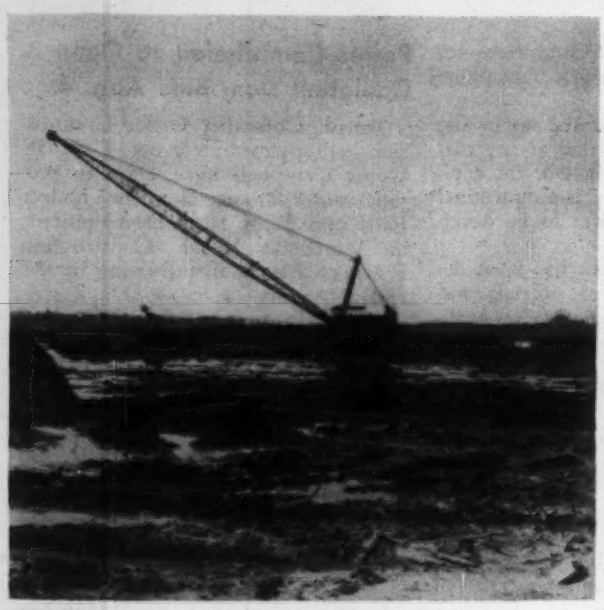
Let Contract for Services At Iroquois Village Sites

First contract for services to new village sites on the St. Lawrence Power Project was awarded last week by Ontario Hydro-Electric Power Commission, Toronto, to Beaver Construction Co., Montreal, for $332,424.

Eleven construction companies bid the job, which calls for sewers, water mains and house services at the site of the new village of Iroquois.

$8-Million Shopping Center

Construction started last week on "Mondawmin," an $8-million, two-level shopping center in Baltimore, Md., that is expected to be one of the largest in the South. The project, which will have 500,000 sq. ft. of shopping area for 60 shops, and parking space for 4,100 cars, was designed by Fisher, Nes, Campbell & Associates, Baltimore architects. William L. Crow Construction Co., of New York, is general contractor.



STRIPPING organic material from the 2,400,000 sq ft area of the runway cleared the site for . . .

FILLING with 1,500,000 cu yd of sand dredged from the bottom of the Mississippi River.

The Navy Builds an Airbase on a Swamp

South of New Orleans on the Mississippi River delta the Navy's Civil Engineering Corps is building a $50-million airbase in the heart of a cypress swamp.

The project—Alvin Callender Field—will be known officially as the Joint Air Reserve Training Center. Upon completion next fall it will be the first U. S. base set up to serve reserve pilots of the Navy, Air Corps and Air National Guard.

The site, near Belle Chasse, La., covers about 3,000 acres in swampy and heavily-wooded terrain ranging in elevation from 5 ft above sea level to 4 ft below. The feasibility of using this site was determined by studies based on design criteria established for a class C-1 airfield. Requirements dictated that the runway support and withstand either a 50,000-lb wheel load with a 150 psi tire pressure or a 20,000-lb load with 250 psi pressure.

• **First obstacles**—Test borings made at 100-ft intervals showed that the top layer of organic material would have to be removed for the entire 8,000-ft length and 300-ft width of the proposed runway—and to depths ranging from 1 to 6 ft. And once this material was taken away, the low level of the land would require that the runway be built on a fill to provide adequate drainage.

The project would need large quantities of fill, and it appeared at first that material would have to be hauled in from a location 40 mi away. But prospective bidders sampled material at the bottom of the Mississippi River—a distance of only 1½ mi—and found marine sand that was acceptable as fill.

To prepare for the entry of heavy equipment, the site was drained of excess moisture by cutting a system of canals through the area. When the terrain was dry enough to support machines, bulldozers with horn-shaped spikes attached to their blades were brought in to clear the wooded area.

Then a dragline equipped with a 150-ft boom and 5-yd bucket was used at the runway site to remove the surface layer of organic material. This machine, supported on mats to prevent it from sinking into the muck, stripped roots and light material.

While stripping operations were going on, a stockpile of some 1,500,000 cu yd of sand was built up by a 3,500-hp dredge in the Mississippi channel that pumped material 8,000 ft to a previously prepared 95-acre basin near the runway.

A fleet of small dump trucks attempted to transport fill from the stockpile to the runway. But the sand that made up the haul roads and fill areas was too soft to support these vehicles. To reach the desired production of 8,000 cu yd per day, it was necessary to bring in high flotation rubber-tired earth-moving equipment.

• **Settlement problems**—Test borings made to a depth of 100 ft throughout the area showed that the top 65 ft of soil was extremely soft and had a high water content. Sample test loadings determined that eventual settlement would vary from 13 in. to 28 in., with 70% of subsidence occurring during construction. Post-construction settlement would be greater than the acceptable 3 in. to 4 in. for concrete pavement—and, in most cases, greater than the 6-in. settlement that could be tolerated with flexible pavement.

To combat this settlement problem, it was decided to accelerate the rate of subbase subsidence before the project reaches the paving stage.

When a section of runway, taxiway or apron fill has been built up to the actual depth desired for construction, an extra depth of sand is placed on top. The weight of this surcharge is 50% to 100% more than the load of the future pavement will be. After a 30 to 45 day period this added weight of sand will have speeded up subsidence of the subbase to bring settlement within tolerable limits. When the accelerated settlement of the first section is complete, the surcharge is moved forward to the next section. In the case of the runway, a 77,000 cu yd surcharge will be rehandled six times.

The $5.3-million job of building the runway, taxiways, apron areas and a lighting system is a joint venture of Blythe Brothers Co., Inc., Charlotte, N. C., and Morrison-Knudson & Co., Inc., Boise, Idaho. Representing the combine on the project are M. H. Brown, Jr., project manager; John T. Christman, general superintendent; W. J. Stribling, project engineer; Frank P. Robertson, office engineer, and J. P. McCoy, office manager and purchasing agent.

J&L Junior Beams prove economical, adaptable

see our catalog in SWEET'S

at Orgill Brothers $2,000,000 warehouse

Five hundred and fifty tons of J&L Junior Beam roof purlins have been specified for Orgill Brothers new $2,000,000 wholesale hardware warehouse in Memphis, Tenn. Both architect and contractor agree that Junior Beams enabled them to save money on this 14-acre project and complete the job on schedule.

Architects W. C. Jones and W. C. Jones, Jr., chose Junior Beams because their physical characteristics permitted greater economy in design, allowed more head room, better clearance and thus provided a better stabilized building. In addition Junior Beam's light weight made for fast, easy handling during construction, as well as during hauling to the building site.

Clinton J. Wagner, Vice President of S&W Construction Company, contractors on the job, reported that "we found Junior Beams to be adaptable and economical for this type of construction. Deliveries were satisfactory and well ahead of schedule. This was a great factor in enabling us to complete the project on time."

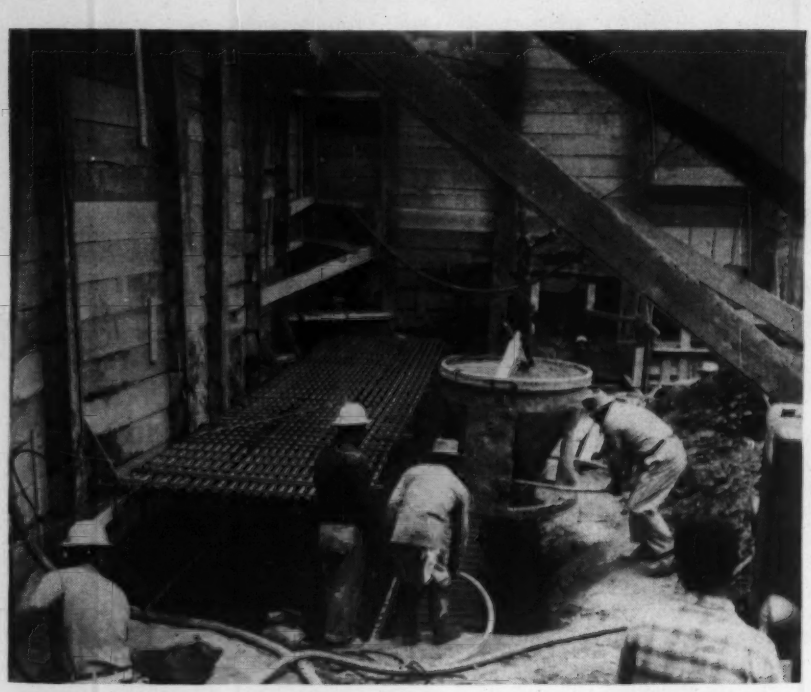
Additional savings were outlined by B. S. Merrill, structural engineer for the architects. He said, "we had 6500 sprinklers to install and the use of Junior Beams effected considerable savings . . . I would estimate we would have had to put in 10 to 20 percent more heads if we had used some other joist and at $20.00 a head you can see what we saved."

Take a tip from the men who built Orgill Brothers Warehouse, Junior Beams are adaptable, rigid, shrinkproof, fire resistant, vermin-proof, and impervious to termites. Write for more information today. Our new booklet, *J&L Junior Beams*, shows how these modern structurals are being used as floor joists and roof purlins, with loading and spacing tables for various spans.

J&L STEEL

Jones & Laughlin

STEEL CORPORATION — *Pittsburgh*



Massive Footings Used for Los Angeles Building

First concrete in footing marks early work on new height-limit building for Superior Oil Co. in downtown Los Angeles. All-welded steel structure will have tower 115 ft square extending 182 ft above street level—as high as permitted by city's code.

Footing is 36 ft below street level and measures more than 14x33 ft in plan. Massive spread footing was needed as close proximity of property line makes corner support eccentric. Architects are Claud Beelman & Associates with structural engineering by George E. Brandow & Roy G. Johnston. Contractor is William Simpson Construction Co.

Oregon Highway Commission Gets Portland Road Plan

The Oregon Highway Commission has been handed a 20-year, $371-million blueprint for road and bridge construction that Chief Engineer R. H. Baldock considers vital for the metropolitan Portland area, where he is predicting a 150% traffic increase by 1975.

Basically, the plan would add 14 expressways, totaling 74 mi, at a cost of $53 million; 14 freeways, totaling 96 mi, at a cost of $275 million; and 24 major streets, totaling 121 mi, at a cost of $43 million.

Baldock did not put a price tag on other parts of the plan, notably construction of five new bridges and widening of two others across the Willamette River.

And, the cost was not estimated for an ambitious tunneling operation through the West Hills for the east-west Sunset Freeway.

Significantly, $40 million of the work has been charted for the next two years by the Highway Commission from funds authorized by the 1955 legislature.

A portion of the program is being prepared for early bid calls in a move to provide inter-ties between southwest Harbor Drive and four key feeder streets at points described by Baldock as the city's worst present bottlenecks.

Canadian Agencies Agree To Expand Two Airports

The busiest airport in Canada, Toronto's Malton Airport, 17 mi from the center of the city, will be expanded at a cost of $25 million, and Toronto Island Airport will be improved at a cost of $3 million as a result of an agreement reached by the City of Toronto and the Department of Transport, in Ottawa.

Expansion at the Malton Airport includes a new $10-million terminal to be started within a year. The present main south-west runway will be lengthened from 6,000 to 10,000 ft and the west-east runway from 6,200 to 7,200 ft.

In return for ceding Malton Airport to the federal government, the city-owned Toronto Island Airport will be expanded with federal funds. The field will get two new 4,000-ft runways, approach and runway lighting and a new hangar. Work will start this year.

Pennsylvania Picks Route For Turnpike Extension

The Pennsylvania Turnpike Commission has selected the route for the top-of-the-T-section of the proposed northwestern extension in Erie County. This first-approved section will add 46 mi to the Turnpike system.

It will extend eastward from a point near the Ohio-Pennsylvania line in Springfield Township to a point on the Pennsylvania-New York State line in North East Township, connecting with the New York Thruway, now under construction.

California Files Claim For Shasta Dam Damages

A charge of careless and negligent operation of Shasta Dam by the Bureau of Reclamation is made in a levee damage suit filed in the Federal District Court in Sacramento, Calif., by the State of California.

The state seeks $764,741, an amount state engineers claim was paid by the state as its share of costs of fixing Sacramento River levees after the flow from the Shasta project was shut off in May, 1948, to allow work on Keswick Dam, Shasta Dam afterbay.

The suit charges the release of water was halted without due regard to the safety and stability of the levees and banks of the Sacramento Flood Control Project.

It is contended the bureau cut the flow from 16,000 cfs. to zero and held it at zero for 12 hours. This resulted, the suit claims, in 5 to 8-ft. drops in the level of the river, causing slips in 44 places in a 55 mi. stretch between Knights Landing and Colusa.

State engineers said the federal government spent about $4 million in repairing the damaged levees. Congress passed a special bill to permit the state to file the suit against the federal government. The Congressional act specifies that the damages shall be set by a federal district judge presiding at a hearing without a jury.

Aberthaw Company Sold

Cabot, Cabot & Forbes, of Boston, developers of planned industrial centers, have purchased the Aberthaw Company, a nationally-known construction company, which has been active in the commercial, institutional and industrial building fields.

Aberthaw, founded in 1894, won early recognition for its concrete work. The firm was selected to build the first concrete sidewalks in the city of Boston, and in 1903, built the Harvard Stadium, using reinforced concrete.

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From Maine to California, and from the far north in Canada to Mexico, you'll find new, modern industrial and commercial buildings sporting bright, attractive exteriors of Mahon Aluminum or Stainless Steel Curtain Walls. In a few short years, the trend has swung definitely to this economical, light weight curtain wall construction . . . one large manufacturer has built seven complete new plants—including powerhouses—with Mahon Insulated Metal Walls. Several others have built two or more plants employing the same construction. In the Public Service Field, thirty-five power and steam generating plants have been built with Mahon Insulated Metal Walls. This is truly nationwide acceptance. Every day, more and more architects are giving their clients the benefit of this modern wall construction. Before you plan your next building, investigate the savings in material and labor costs, and the cumulative savings deriving from reduced construction time, which is always a plus factor when buildings are enclosed with quickly erected insulated metal curtain walls. Mahon Insulated Metal Walls can be erected up to sixty feet in height without a horizontal joint—a feature of Mahon Walls which is extremely important in powerhouses, auditoriums and many other types of buildings where high expanses of unbroken wall surface are common. See Sweet's Files, or write for Catalog B-55-B.

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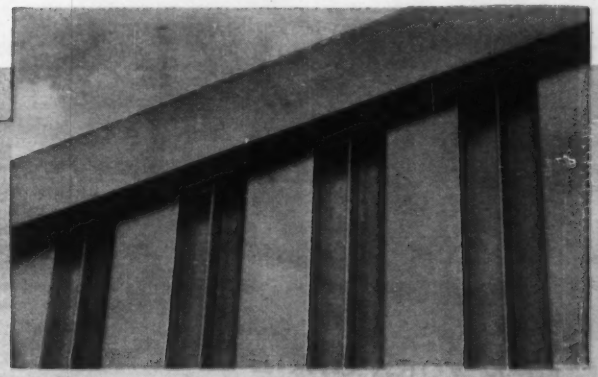

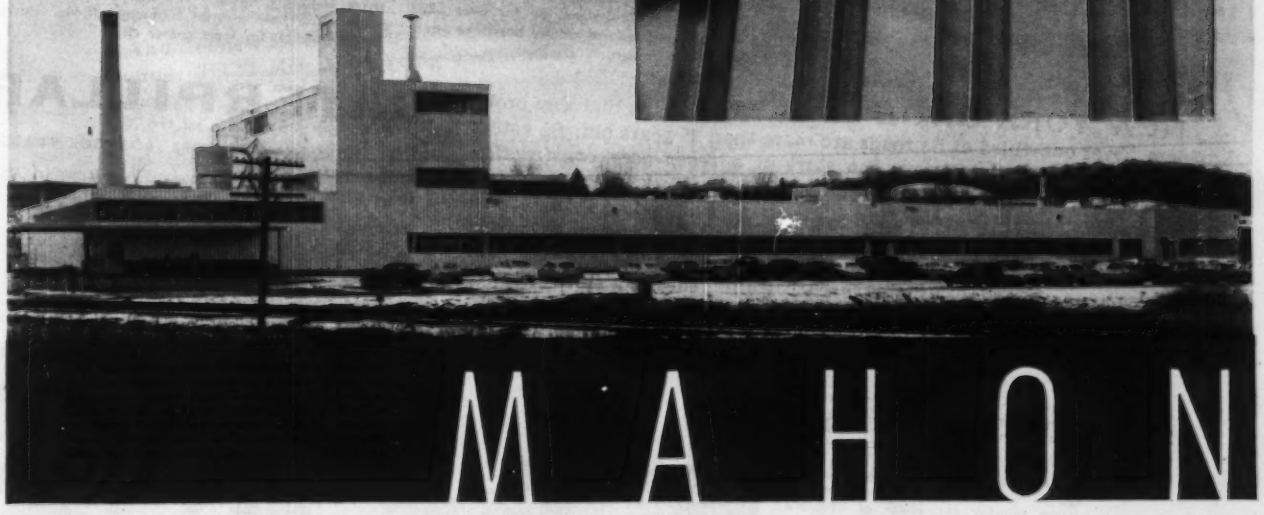

MAHON

BIG CITIES OR LITTLE ones can be bottlenecks. Motorists cuss them and they cuss back. For when traffic is led through the business district, the resulting jam not only irritates motorists, but threatens to disrupt the economic life of the city. That's why New York State is offering a master plan for arterial highways—high-capacity expressways for through traffic—to 60 of its cities.

IT'S NO FUN BEING A BOTTLENECK

New York City and Mechanicville, N. Y., had the same problem. They were being choked to death by through traffic. Then the state began blasting open the traffic jams. How's your state doing?

THE $50 MILLION Major Deegan Expressway in New York City is part of the plan. For cars coming into the city via the magnificent New York Thruway, it will provide a high-speed connection to many bridges leading to Manhattan. So far over $232 million of state and federal money has been spent on the state-wide program.

MECHANICVILLE BENEFITS, too. Over 4000 cars daily whirl through this small city of 7500. Once they had to snake along a narrow road, twist under a dangerous underpass (clearance: 7 feet!) and drive haltingly through the business section. No more. The new arterial highway, above, carries traffic quickly, far from center city.

NEW YORK STATE knows it still has a big highway problem. Over one-third of its roads are more than 25 years old. So voters are being asked to approve the start of a *seven-year construction program costing over $2 billion!*... Like New York, your state has a sound highway program, but it needs *your* support. Drop a post card to your governor or highway commissioner at the state capital and find out what your state wants to do for you. And remember, safe driving is as important as good roads. Together they're a more effective way of breaking up traffic jams than honking a horn.

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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EARTHMOVING EQUIPMENT

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Wherever you see big yellow machines working on your roads, you can be sure your state is getting its money's worth.

•

If your organization is interested in seeing "The Perfect Crime," a dramatic motion picture showing the effect of obsolete roads on your pocketbook and safety, write Caterpillar Tractor Co., Box N-3, Peoria, Illinois.

What it takes to get new roads

It takes alert citizens, co-operating with their highway officials. And it takes able contractors—with modern equipment.

On the opposite page is a black-and-white reproduction of a full-color advertisement which appeared recently in *The Saturday Evening Post*, *Time* and *Newsweek*. Since 1947, Caterpillar advertisements have been alerting car owners and taxpayers to the desperate need for new roads. This year, in messages like this one, we are urging *the reader's direct support* of his state's highway program.

This is the beginning of the job. But it's contractors like yourself who finish it, with the best road-building equipment in the world.

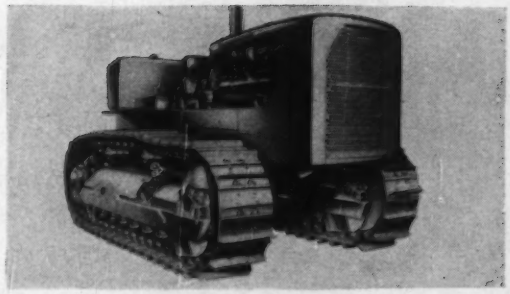
Much of this equipment is *brand new*. Caterpillar's mighty D9, for instance, the new King of the Crawlers: 286 HP (engine), 56,200 lb., choice of torque converter or direct drive, the first track-type tractor ever equipped with a Turbocharger.

And the new D8 Series D (torque converter), and Series E (oil clutch drive): bigger, heavier than the D8, powered with a new 191-HP engine.

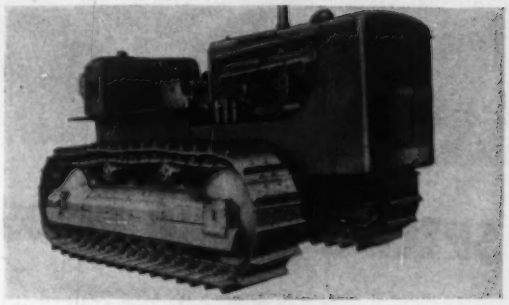
And the new D7 Series C: now with a new engine of 128 HP and having a vibration balancer.

These machines—and the entire big yellow line—mean higher production, higher profit for you. Let your Caterpillar Dealer show you how—in detail. And remember him, too, for prompt service and for genuine CAT* parts—parts you can trust.

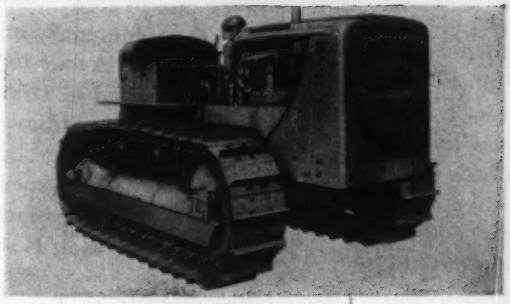
CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U. S. A.



The D9 . . . new King of the Crawlers



The new D8 Series D and E



The new D7 Series C

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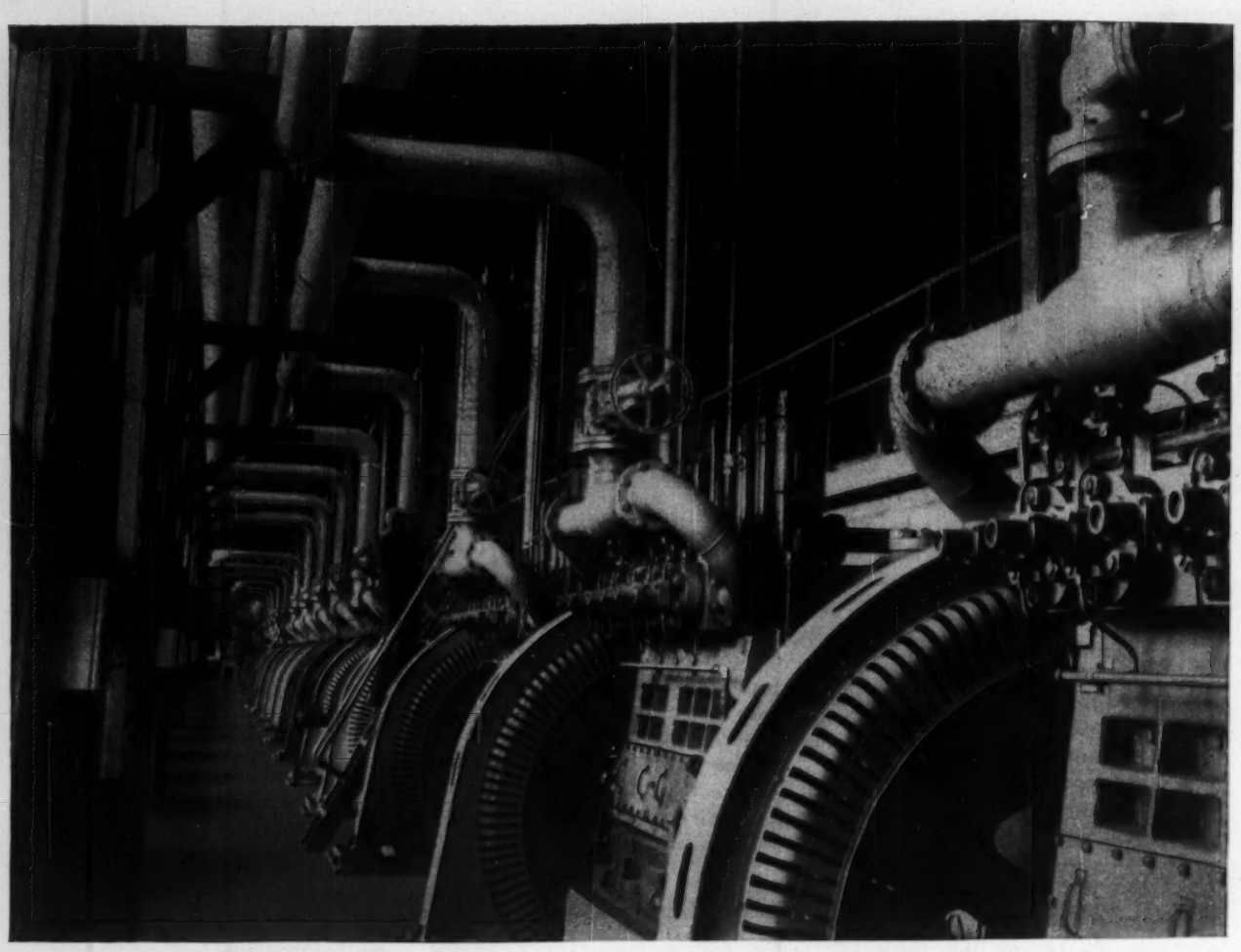
ANOTHER EXAMPLE OF CATERPILLAR LEADERSHIP IN ACTION

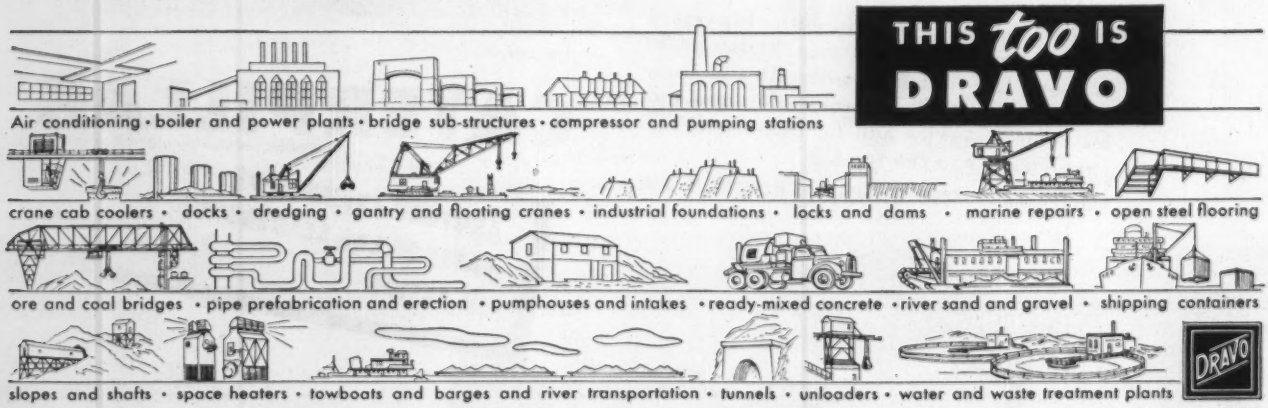


SPECIAL PIPING FEEDS SHELL-FORMING PRESSES

Water at a pressure of 2500 pounds per square inch is carried from this battery of 24 pumps to hydraulic shell-forming presses at the Government's new Scranton, Pennsylvania, Ordnance Plant. A mile-long network of piping, fabricated and installed by Dravo, is a vital link in the manufacture of 155 millimeter and 8-inch shells.

Because of varying demands from the presses, special "shock" equipment was installed to reduce vibration and smooth out jolts in the system. The result is safe, smooth and continuous production for the plant's operator, United States Hoffman Machinery Corp.

This piping installation is another example of how Dravo has been serving business and industry in many engineering fields for more than 60 years, with customer satisfaction considered essential in every transaction. DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.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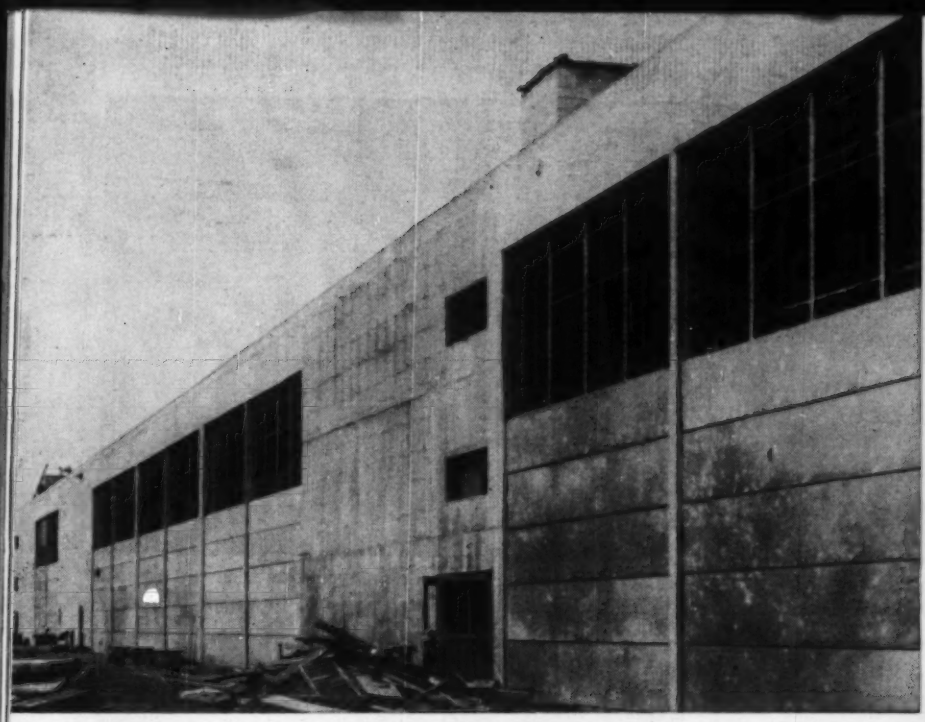


Low-Cost Concrete Warehouse —

Precasting and prestressing saved $45,000 compared with a cast-in-place, reinforced-concrete alternative on a $2,230,000 materials-handling warehouse built for Boeing Airplane Co. at Seattle. In addition, the 290,000-sq ft structure was finished in 189 days, instead of the 245 days required for cast-in-place construction.

The saving in time was particularly important to the owner, who is engaged in a B-52 production program for the Air Force: 1. The building was badly needed to improve the materials-handling situation. 2. The roof was needed to solve the shortage of parking space; it will park 1,000 cars. 3. The yard space required for construction activities is also wanted for airplane production.

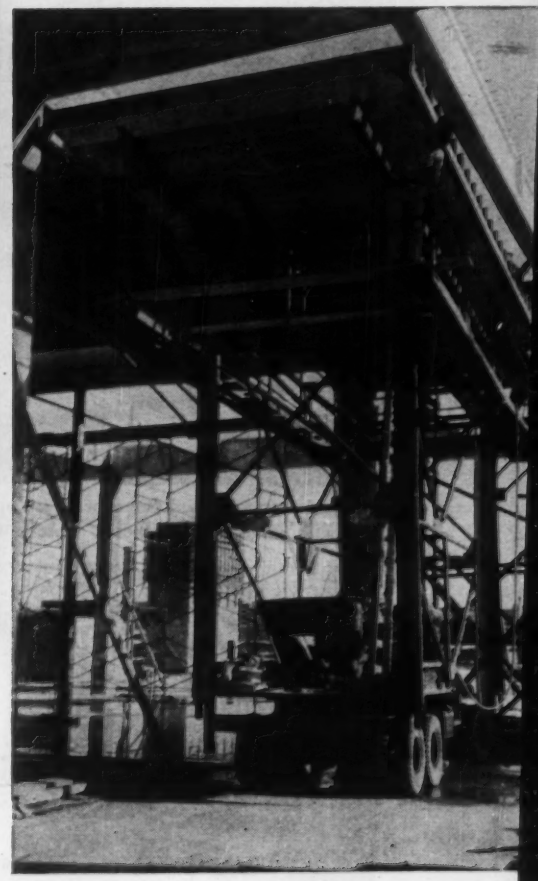
Two complete designs were prepared and offered for bid. The basic design was for cast-in-place reinforced concrete construction. The alternate permitted use of a post-tensioned (end-anchored) prestressed, precast system. In addition, bidders were allowed to submit their own alternatives, and several schemes were bid. Competitive bidding, however, favored post-tensioning over pretensioning (tendons anchored by bond to the concrete throughout their length). An important factor influencing the bidding may have been that continuity of girders could be accomplished more easily with post-tensioning.

Because the structure was the first large building in Seattle to utilize prestressed girders and beams, the first members fabricated were tested to destruction in the University of Washington structural laboratory. Test results followed predicted behavior based on design theory very closely. When loaded to destruction, the members carried the equivalent of 1.2 times dead load plus four times the design live load.

• **All but roof precast**—Not only were beams and girders precast, but also the columns and walls. Only the roof was cast-in-place, and it was designed to act as part of the top flange of the beams.

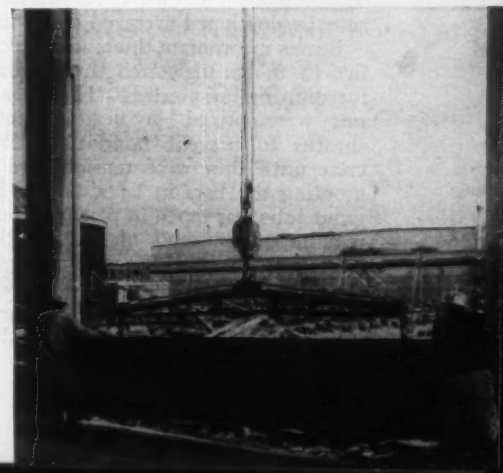
The building required precasting of 146 girders, 460 beams, 190 columns and more than 500 wall panels.

Girders are 44 ft long, 44 in. deep, and weigh 11 tons. Beams are 39 ft long, 34 in. deep, and weigh 5 tons. Columns are 24 in. square and about 26 ft high. Wall panels are 3.5 x 20 ft. Beams, girders and columns were fabricated in a casting yard adjoining the building



Roof is cast on a portable tower . . .

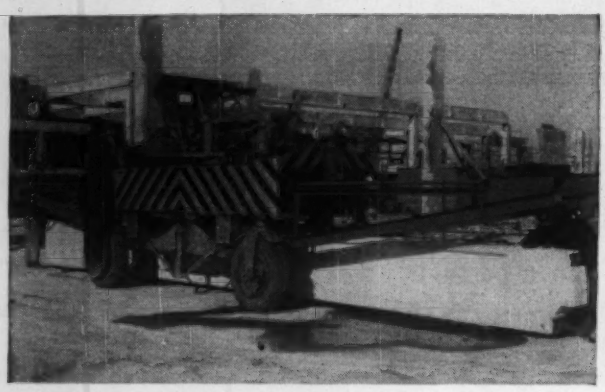
Prestressed beams and the columns are precast . . .



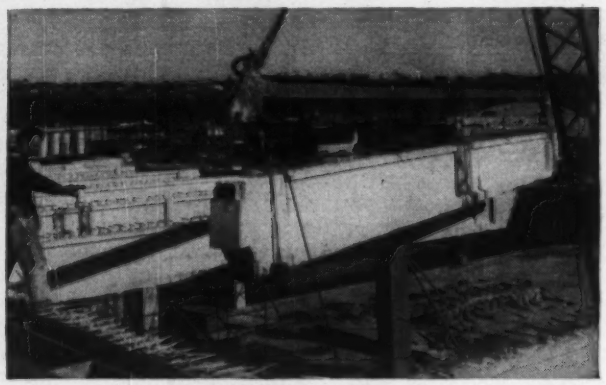
. . . And the wall panels too, are precast — with big savings in time over cast-in-place work

FORMS for prestressed beams were set up near the building to permit fabrication on a production-line basis. Tendons were enclosed in metal sheathing to prevent bond.

JACKS tensioned the bars, after which nuts were tightened to anchor them.



STRADDLE TRUCK with hydraulic lift shifted beams from casting yard to building site.



PRESTRESSED BEAMS were erected with a crane. Shear connectors protrude from flange, to grip cast-in-place roof.

site, whereas wall panels were cast on the site.

• **Production line for beams**—Six sets of steel forms were used for the beams, two for the girders. Each set was used at least 73 times. Total cost of forms reached $12,000.

To provide concrete for the precast members, a 30-ton batch plant was set up with a 10-cu ft mixer. A mix containing 7 bags of cement per cubic yard of concrete was used to meet design requirements. The concrete was required to have a 2-day strength of 4,000 psi, to permit early prestressing, and a 28-day strength of 5,000 psi. The ultimate strength actually developed averaged 6,500 psi.

Beams incorporate three, and girders five 1¼-in.-dia. high-strength steel bars for applying the prestress. These tendons were placed in flexible metal sheaths to prevent bond with concrete until they were tensioned. For grouting the bars in later, a ¾-in.-dia grout tube was taped in place in openings near each end of the sheaths. Some mild steel reinforcing, primarily No. 3 and No. 4 bars, also was used.

Concrete was transported in a ½-cu yd bucket by crane from the batch plant to the forms. There, it was deposited in the bucket of a four-wheeled buggy for distribution. This buggy rode a platform above the forms and released the mix through a gate above and parallel to a slot in the platform.

Over a period of about 10 weeks, 12 beams and 4 girders were precast each day on a two-shift basis.

A tarpaulin was placed over the members one hour after they were cast and steam introduced under the cover for curing. As many as 16 units were cured at a time. Curing was stopped to permit the forms to be stripped—generally four hours after concreting—and then continued for a total of about 30 hours, the time varying slightly to suit conditions of the work.

Tendons were tensioned on the third day. Two calibrated hydraulic jacks applied the pull at opposite ends of the members. In an average time of less than 30 sec per bar, the tendons were stressed to 100,000 lb. The bars then were anchored by tightening nuts on the ends against steel plates on the beams and girders.

Excess exposed steel was burned off. Next, grout was applied at one end of the sheaths enclosing the tendons until forced out the other end. Finally, both ends were plugged under pressure. This procedure was adopted to assure complete filling of the sheaths with grout, fully embedding the tendons.

Equipped with anchor inserts for the purpose, beams and girders were removed from the casting yard by a straddle truck with strongback and patented hydraulic lifting device. They were moved either to a stockpile or into the building for erection.

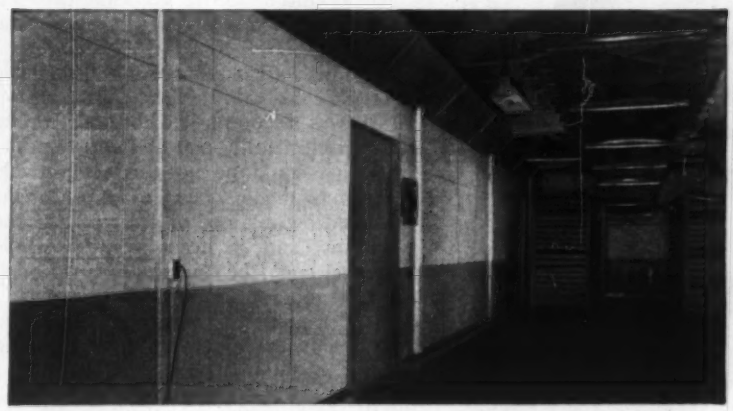
A 30-ton mobile crane erected girders, beams and columns; a 20-ton crane placed the wall panels.

• **Precast columns**—Columns were precast in a horizontal position in plywood forms, which were re-used about 10 times. Concrete was placed from a powered buggy.

For seating the columns on the foundations, a round cup, 2 in. deep, was embedded in the lower end of each vertical member. The cup was designed to fit over a 2-in.-dia steel pin extending 3½ in. above the foundation pier.

To receive the columns, each pier was constructed with a 19½-in.-deep pocket, which was grouted just before the column was erected. The seat-

Moisture-resistant. K&M Apac sheets are used on the ceiling of this toll entrance and custom office inspection enclosure at the Port Huron, Michigan, Blue Water International Bridge. The moisture in the air at the bridge won't harm them.



Temperature, humidity safeguards. Walls of K&M Apac sheets give dependable aid to a cigar manufacturer in an important process—where temperature and humidity are accurately controlled.

All-purpose sheets. This photo shows K&M Apac sheets being applied on a building where they are used for both outside and inside walls as well as for ceilings.

You'll be wise to choose

K&M APAC

Asbestos-Cement Sheets

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Interiors—Exteriors

Remarkable economy!

You'll find a thousand and one uses for these flat asbestos-cement sheets: as an interior and exterior siding, office paneling, plant and office ceilings, machine shop sheathing, stock room sidewalls, basement partitions, linings for elevator casings. Use them almost everywhere, inside and outside.

Built to last. K&M Apac sheets are made of two practically indestructible materials, asbestos fiber and portland cement. They won't burn, rot, or corrode. And they never need protective paint.

Look over the illustrations. See a few of the many places where Apac sheets are applied. Then contact your K&M distributor, and ask him to tell you more about low-cost K&M Apac sheets. Informative folders also available on request. Address inquiries to our headquarters in Ambler, Pa.

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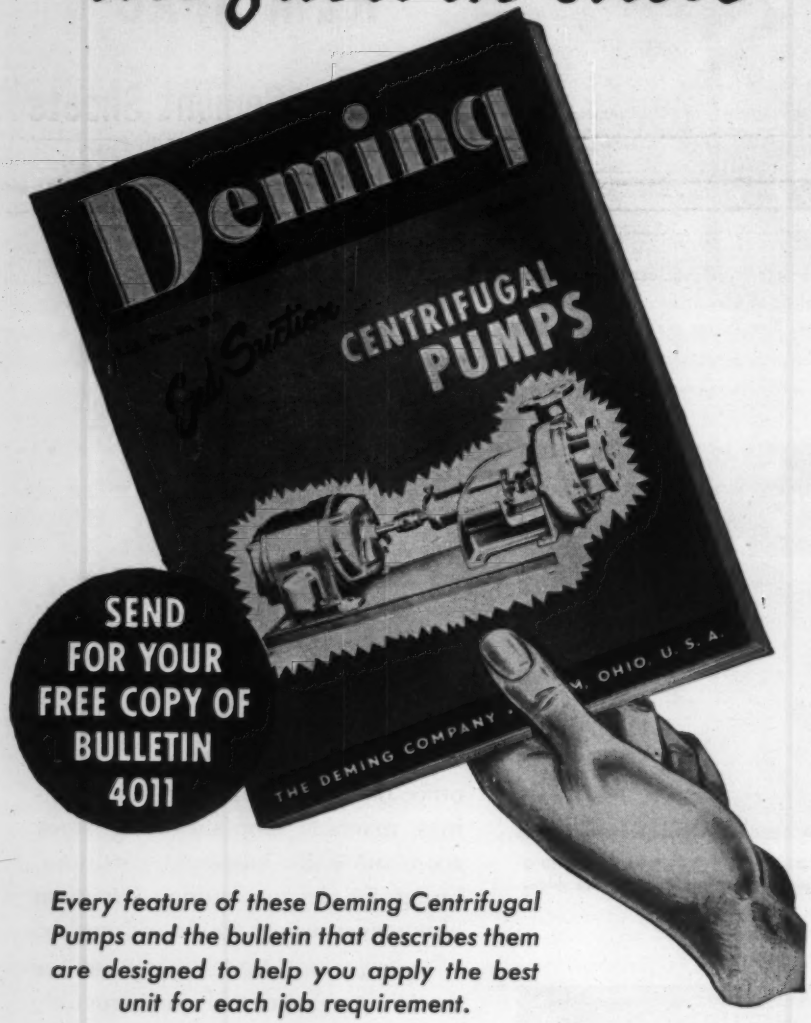

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Every feature of these Deming Centrifugal Pumps and the bulletin that describes them are designed to help you apply the best unit for each job requirement.

A system of unit numbers is employed in Bulletin No. 4011. Performance tables and curves for Belt driven and Motor driven units give full information and can be cross checked. Selection of the unit number from a curve guarantees non-overloading of the motor or other source of power.

The Deming Fig. 4011 Series of End Suction Centrifugal Pumps are designed to handle a wide variety of liquids. The separate liquid end construction can be furnished in special alloys for handling corrosive liquids, when specified. The support head can remain standard cast iron construction at an appreciable saving to the customer compared with an all-special alloy construction. Various optional features make it possible and economical to adapt these pumps to many applications. Sizes range from 1 to 5-inch discharge; capacities up to 1,000 g.p.m. and heads to 250 feet.

These versatile Deming Centrifugal Pumps offer you the solutions to a wide variety of liquid materials handling problems.

Send for your free copy of Bulletin 4011 NOW!

75th ANNIVERSARY DEMING PUMPS

THE DEMING COMPANY
536 BROADWAY • SALEM, OHIO

ing detail permitted easy, quick erection of columns and gave some rigidity at the column base.

The wall panels were cast one atop the other, five high, requiring only edge forms. They were attached to the building frame by welding steel plates on panels to steel on columns.

• **Portable tower speeds roof work**—Construction of the cast-in-place roof was simplified by use of a portable tower for placing the forms. Contractor-designed, this truck-mounted jumbo was capable of handling the form for the whole of a 14x40-ft bay. It positioned and held the form until it could be supported on the bottom flanges of the beams.

The upper portion of the steel platform could be moved backward or forward 18 in., and sideways 12 in., by controls on the platform. The forms also could be shifted vertically between heights of 22 and 30 ft above the floor.

This vertical adjustment allowed the rig to clear all overhead obstructions. It was accomplished by telescoping four electrically powered corner posts, which could be operated collectively or individually. Thus, exact placement could be obtained of every part of the forms, and if necessary, the whole panel could be "wedged" up through tight openings.

Perimeter scaffolding was mounted permanently on the adjustable part of the machine. It kept workmen at a good working position for every phase of the operation. A 12-kw portable power plant mounted on the truck provided all power and light needed.

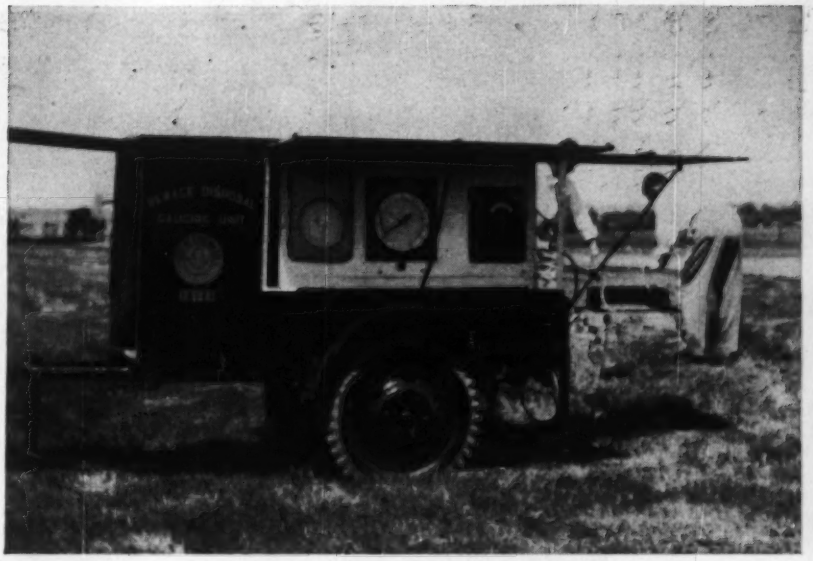
Once placed on the jumbo, the forms did not touch the floor again until after they had been used for the last time.

The jumbo held as many as seven men, who often remained aloft during an entire shift. It eliminated the need for other scaffolding. The only shoring needed during the entire operation was a single 10-in.-dia timber at midspan of the girders to improve continuity conditions.

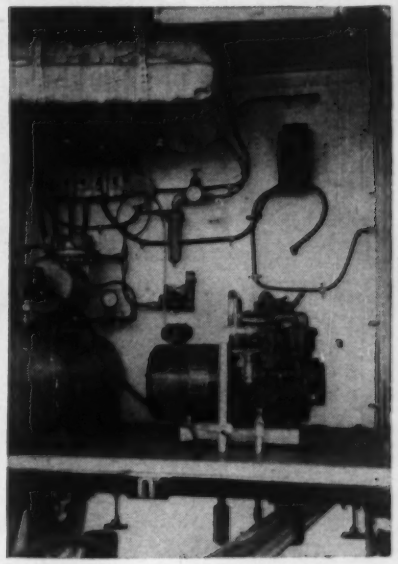
Roof concrete embeds shear connectors projecting from the top flanges of beams and girders. This was done in accordance with the design assumption that the roof slab would act as part of the top flanges. Mild steel reinforcement also was placed over columns to provide for continuity of girders.

A two-lane ramp, with snow-melting conduit incorporated, gives access to the roof parking area.

Harmon, Pray & Detrich, Seattle, were the architects. Olsen & Kitchin, Seattle, were the structural engineers. Leavitt, Chandler & Co., Bellevue, Wash., was the general contractor.



IN ACTION, the unit is capable of unattended 24-hour duty, but one man is kept on hand when it is working. Flow recorder, pH indicator and pH recorder are mounted on weather-protected side panel lighted by fluorescent fixture.



THE UTILITY SECTION of the gaging unit contains the generator, compressor, gasoline fuel tank and control equipment.

City Staff Builds Sewer Gaging Unit

If you were to ask Arthur D. Caster, sewage disposal engineer of Cincinnati, O., what piece of equipment he considers most important in the sewage disposal section, his answer undoubtedly would be, "our sewage disposal gaging unit."

Designed by his engineering staff and fabricated by maintenance personnel at the city's Little Miami Sewage Works, the trailer-mounted unit is the key to financing of Cincinnati's complete sewage disposal program (ENR June 25, 1953, p. 40, Oct. 22, 1953, p. 37).

With the $47-million program to pay for, and 700 industries discharging their wastes into the municipal collection system, the city was faced with a problem of working out an equitable method of financing. With the aid of Havens & Emerson, Cleveland consulting engineers who designed the over-all project, an answer acceptable to both city and industry was found, with one string attached.

In order that each industry could be assessed for its individual share of the pollution load in excess of those considered normal, an individual waste surcharge, based on the levels of suspended solids and BOD of each was planned. The normal design loads were taken care of by a basic sewer service charge. But the hitch developed with realization that the city would have to accept each industry's claim as to characteristics of its plant effluent, or else conduct tests on outfalls of all 700 plants.

It was under pressure of this alternative that Caster's engineers designed the unit that was built in the Little Miami shop. Answers to certain basic requirements were built in. First, it had to be continuous-operation equipment. Second, it had to incorporate as many steps in the testing and sampling cycle as possible. Third, it had to eliminate as many return calls as possible.

• **Stiff requirements**—Laboratory precision is easily attained, but accuracy in the field presents a variety of problems. It was imperative, therefore, that the unit not only be capable of continuous operation, but also of taking readings for measurement, sampling, making composites and determining pH in conjunction with lab analyses. Moreover, the operation had to be highly precise.

A start on fabrication was made through purchase of an Army-surplus two-wheeled, one-ton trailer from which the body was removed and replaced by a flat plywood bed. Three screw jacks were installed to serve as adjustable leg supports.

Mounted pneumatic flow-recording apparatus consists of a transmitter, receiver and accessories. The transmitter is of the air-bellows type, providing an output of air pressure directly proportional to the level over the crest of a 90-degree weir. It is actuated by a bubbler-pipe system that converts the head on the weir to an increased pressure of 3 to 15 psi.

The receiver operates with a corrosion-resistant metal bellows and incorporates both totalizer and recorder. Totalizer is driven by 110-v, ac motor; recording chart is rotated by a synchronous electric clock mechanism.

• **Self-sufficient**—Air pressure for the instrument is supplied by a 20 cfm electrically driven air compressor. The fully automatic compressor is furnished with a storage tank of five-gallon capacity, intake air filters and overload safety mechanisms. Power for the compressor motor, as well as for all other electrical devices, is supplied by a gasoline driven 115-v, 60-cycle single-phase generator with a 1,000-watt output. When available, an outside source of power is used.

The pH apparatus includes a potentiometer, recorder, electrodes and accessories. Electrodes are designed for direct immersion in pipelines or open channels, and are protected from damage due to floating solids. The potentiometer indicator and recorder and the flow recorder are mounted on a panel protected from the weather by a drop-leaf cover hinged at the top.

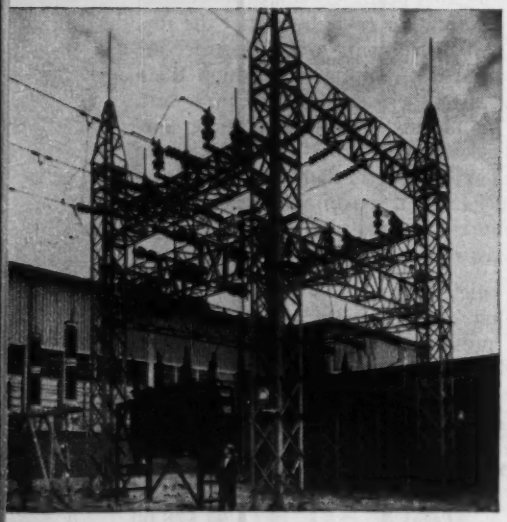
All instruments and accessories are mounted on springs to cushion them against shocks encountered in transit. The air tube for the flow meter and the leads on the pH electrodes are of sufficient length that the trailer may be located a maximum of 50 ft away from the gaging and sampling point.

Costs for the unit are as follows:

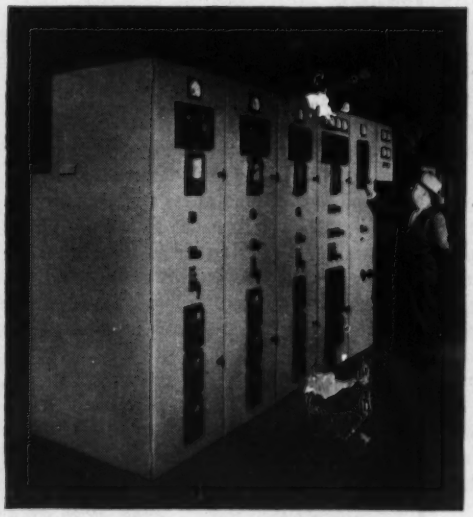
Trailer (Army surplus)	$ 99.00
Flow recorder (with compressor and accessories)	1,300.00
pH meter and recorder (with accessories)	1,100.00
Generator	245.00
Materials for fabrication	390.00
Design	684.00
Fabrication labor	710.00
Total	**$4,528.00**

In addition to industrial waste sampling and testing, the trailer has been busy with sewer damage investigations.

Houston water purification plant,
Houston, Texas. Architects and Engineers: Freese, Nichols & Turner. General Contractors: Brown & Root, Inc.—all of Houston, Texas.



Westinghouse coordinated substation is arranged for economical expansion. An extra bay and transformer can be added easily whenever other feeders may be required.



Westinghouse indoor metal-clad switchgear provides positive protection for the entire electrical system through its drawout air circuit breakers. Matched unit construction assures economical expansion.

This Westinghouse control center simplifies motor operation by grouping all controls for 57 motors. There are three such control centers. All units can be easily rearranged or expanded.

FACT:

They engineered an electrical system that anticipates future expansion

flexible design of Westinghouse apparatus permits installed horsepower to more than double

Problem: At the *City of Houston* water purification plant, the possibility of a 100% increase in installed horsepower over the next few years made flexibility a major requirement when the electrical system was engineered.

Solution: An electrical system containing Westinghouse apparatus that has the inherent flexibility to meet tomorrow's expansion plans.

Results: From the coordinated outdoor substation to the indoor switchgear and control centers, future electrical needs have been anticipated. Each Westinghouse component features modular construction. Each permits additions or changes . . . easily and economically . . . as power requirements dictate.

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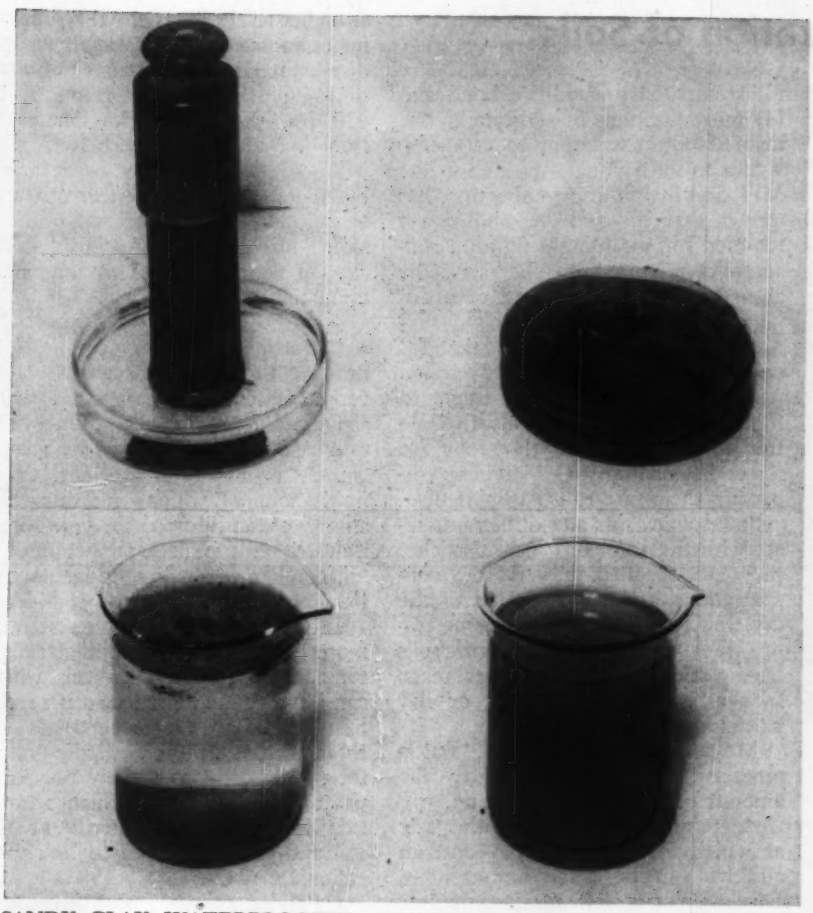


SANDY CLAY WATERPROOFED with a silicone. The treated sample of soil (upper left) supported a weight when placed in contact with water while the untreated cylinder of soil collapsed. Treated soil floats (lower left), untreated soil forms slurry.

Chemical Stabilization Can Make Construction Materials of Weak Soils

T. William Lambe
Director, Soils Stabilization Laboratory, Massachusetts Institute of Technology, Cambridge, Mass.

Millions of cubic yards of soils are discarded every year by highway builders because those soils fall short of meeting the rigid specifications of state highway departments for subgrade or base materials. Yet many of the soils miss being acceptable by so narrow a margin that a minor change in their physical characteristics would convert them into soils that could be used safely in highway construction.

To a lesser degree, a similar situation is found in other types of engineering work such as airfield construction, earth-dam building and foundations.

The possibilities of giving weak soils greater stability through chemical or molecular changes in their surface characteristics, as opposed to binding the soil particles together with some such material as portland cement, have been under study since the early days of World War II when the Corps of Engineers sought to find speedy means for stabilizing the surface of areas close to enemy lines that might be needed for emergency landing fields. Those studies showed such encouraging results that the corps has sponsored much of the research along similar lines since the war.

Now there is increasing evidence that both producers and users of soil stabilizers are aware of their mounting importance as construction materials. For example, at the last annual meeting of the American Chemical Society a whole day was devoted to a symposium on chemicals for soil treatment. This meeting showed that many chemical companies are convinced that there exists a large market for chemicals to treat "dirt." At least a score of the major companies are devoting some study to stabilizers.

Also, the Bureau of Public Roads has initiated a program of research in cooperation with producers of potential soil additives. The bureau is helping these producers evaluate promising materials and will aid in getting any suitable ones tried by the state highway departments. The bureau is primarily interested in additives which will impart strength and water-resistance to soil.

This awakening interest in soil stabilization fortunately is being accompanied by several developments. Significant progress is being made in delineating the chemical, structural and physical nature of soils, i.e., "soil technology." Closely allied to advances in soil technology is the improved understanding of soil-chemical reactions resulting from studies by both those interested in the agricultural and those in the engineering use of soils. The chemical industry is producing many new and interesting chemicals. These developments are helping promote soil stabilization from a try-and-hope operation to an applied science.

As this article will show, there are several types of chemicals which show considerable promise on the basis of laboratory tests. A few of these have been economically and successfully used on engineering projects. Much research and development must still be done, however, before soil stabilizers are as extensively used by the engineer to "cure" soil as medicines are by the physician to cure people.

• **Cost is a major factor**—The most serious deterrent to the wide-scale use of soil chemicals is cost. Many problems where stabilizers would be considered can be solved by removing the troublesome soil and replacing it with gravel. Since gravel normally costs from $1.50 to $3.50 a cu yd in place, a stabilizer which is effective at 10% of the soil dry weight must sell for one cent or less per pound to compete. Portland cement, which is widely used as a soil stabilizer, meets this cost requirement. The development of chemicals that can bond soil particles in a given mass at a lower cost per strength (dollars per pounds per square inch, for example) is not likely.

There are, however, many situations in which only a relatively minor change in soil property is needed. Highway work is an outstanding example. There, while the permissible cost of additive per volume of soil treated is the same for "trace stabilizers" (those used in concentrations of one percent or less of the soil dry weight) as for regular stabilizers, the unit cost may be higher because less is used. For treatment levels of 1% to 0.01%, the permissible unit cost

ranges from $0.05 to over one dollar per pound.

There is another economical use for trace chemicals, namely, to increase the effectiveness of such conventional, low-unit-cost stabilizers as portland cement and bitumen. This use is described later in this article.

• **Meeting special situations**—Many special conditions can, of course, greatly raise the permissible unit cost of stabilizers. The solidification of flowing soils during subsurface construction or the impermeabilization of a stratum of pervious soil under a dam are examples where the additive cost may be of almost no concern. These special cases are numerous but normally involve a limited volume of soil.

The tons of stabilizers that are now and will be needed to treat soils for highway, airport and building construction is indeed staggering. For such markets we must, however, keep clearly in mind treatments costing at most a few dollars per cubic yard of soil. The stabilizers most promising for these large usages are: (1) conventional stabilizers, (2) conventional stabilizers made more effective by additives and (3) trace chemicals to effect modest improvements in soil properties. Continued developments in soil technology and soil stabilization can be counted on to improve construction techniques and thereby increase the effectiveness of all types of stabilizers.

The remaining parts of this article deal with trace chemicals useful alone or with other additives for the improvement of the engineering behavior of soil.

• **New uses for conventional stabilizers**—Before considering trace additives to increase the effectiveness of conventional stabilizers, we should note that some of these materials alone can improve soil at low concentrations. Tests at Massachusetts Institute of Technology showed, for example, that 1% of portland cement raised the stability of a silt from a soaked California Bearing Ratio (CBR) of less than 1 to a value of 15. Thus, the depth of base and pavement required for this subgrade soil would be greatly reduced by the 1% of cement. Treatment of subgrade soils with low levels of portland cement deserves wider use than it now receives.

Trace chemicals can improve stabilization with conventional stabilizers by any of four mechanisms, namely: (1) aid mixing, (2) aid compaction, (3) strengthen soil-additive bond and (4) cause reactions in addition to the main stabilizer reaction.

• **Aids to soil mixing**—Research in the MIT Soil Stabilization Laboratory has shown that the rate of, and power required for, attaining a uniform soil-additive mixture can be markedly altered with aggregants and with dispersants.

Aggregants are chemicals that increase the forces acting between soil particles, thereby causing them to form aggregates. Chemicals that do the reverse, increase the repulsive forces between particles, thereby dispersing them, are called dispersants.

Since aggregants and dispersants react with the surfaces of soil particles, they are effective in very low concentrations, as small as 0.01% of the dry weight of soil. For the same reason, they are most effective with soils having high surface areas per mass, such as soils with some silt or clay particles.

Most dispersants are also "waterproofers" since they reduce the amount of water a soil takes up.

Aggregants can increase the rate at which a mixture of clay and an additive can be made homogenous. Dispersants can both increase the rate of homogenization and decrease the work required to obtain it.

These mixing aids must now be studied with soil mixtures containing the various stabilizers to be sure that some reaction between stabilizer and mixing aid does not nullify the beneficial effects of either.

• **Obtaining greater density**—Considerable experience has proved that, other things being equal, an increase in the density of a stabilized soil generally results in an improvement of strength characteristics. As noted later in this article, dispersants permit a higher compacted density of fine grained soils by soil surface-chemical reactions. A chemical which permits the particles of a treated soil to pack more tightly could strengthen the stabilized soil.

Laboratory tests have shown this reasoning correct. Upon addition of 0.1% (based on soil dry weight) of a sulfonate dispersant to the silty soil that has been treated with 1% portland cement, previously mentioned, increased the soaked CBR from 15 to 25. Attendant with the stability increase was an increase in compacted density from 106 lb per cu ft to 108 lb per cu ft.

Dispersants have also been found to improve the effectiveness of portland cement when the cement is used at higher levels. Tests at MIT showed, for example, that a treatment of 1% dispersant raised the strength of a silt + 5% portland cement from 190 to 420 psi; the density was increased from 113 to 123 lb per cu ft.

Since dispersants have been shown by laboratory tests to benefit mixtures of portland cement and soil by both aiding mixing and increasing density, they certainly merit careful field evaluation.

• **Anti-stripping agents**—Chemicals to improve the soil-stabilizer linkage are very commonly incorporated with asphalt. These chemicals, "anti-stripping agents," are usually long-chain amines or amine hydrochlorides or imidoazolines which increase the affinity of the bitumen for soil. Many industrial by-products, pitches and tall oil, contain anti-stripping agents and thus are of interest as soil stabilizers.

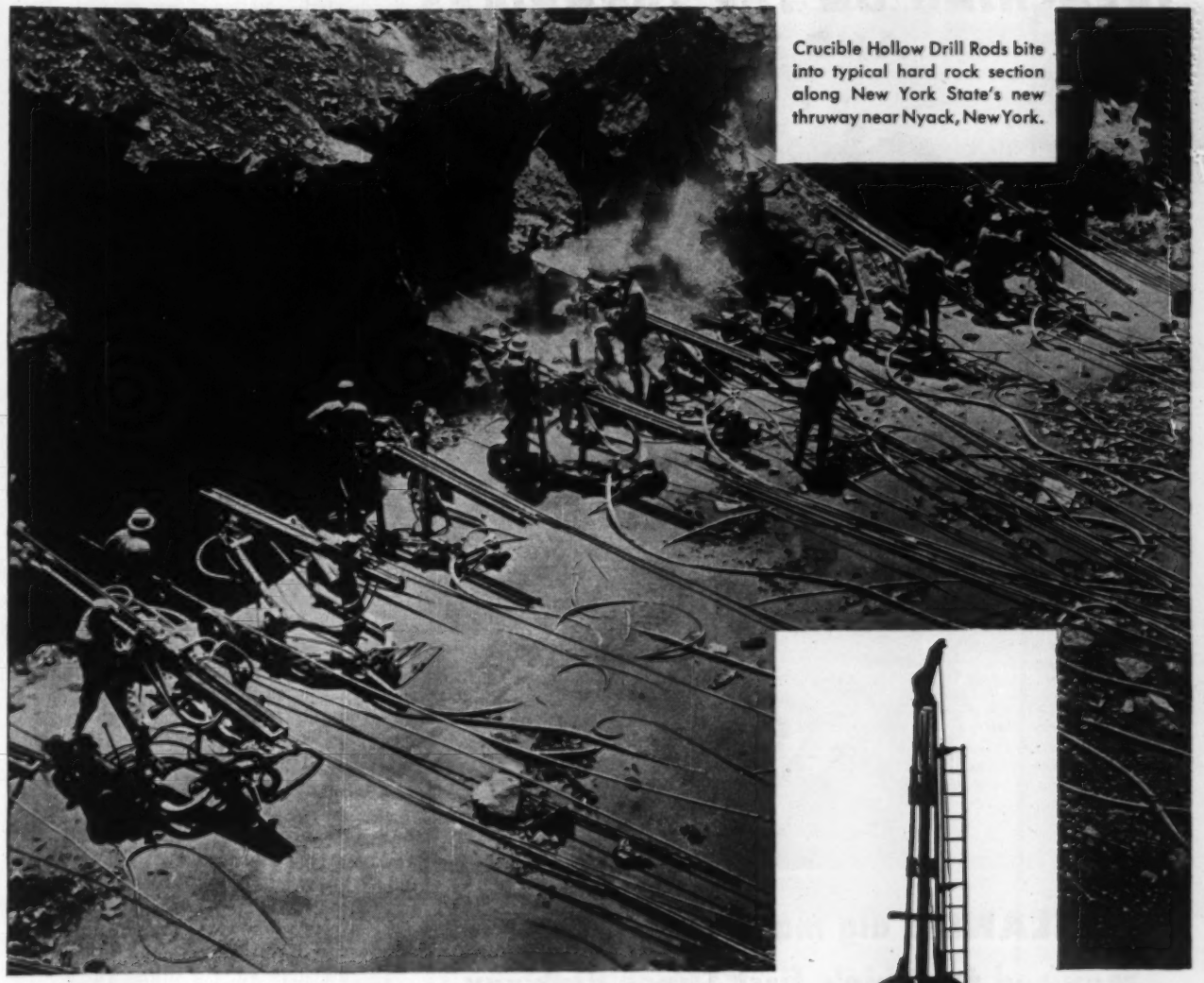
In progress is laboratory research on more effective anti-stripping agents for asphalt and on chemicals which can improve the linkage of other stabilizers to soil. Promising types are those that furnish poly-anionic groups for soil adsorption, namely polyphosphates and sulfonates. Such adsorption increases the negativity of the soil and thus its ability to link with cationic materials.

Catalysts are the most important materials which foster additional reactions in soil-stabilizer mixtures. The catalysts, in trace quantities, are used to initiate most of the polymerization reactions used in soil stabilization. Research suggests that catalysts can cause some of the unsaturated groups in asphalt to react with a resultant increase of strength.

• **Waterproofing soils**—Most of the soil engineer's problems can be traced to the influence of water on soil behavior. The strength and compressibility of fine grained soils are largely determined by the quantity of water within the soil pores. For example, Boston blue clay, at its natural water content, has about 20 psi compressive strength but, upon drying, the clay has over 1,500 psi strength.

Additives which can prevent or even reduce the amount of water taken up by a soil have potential application. Successful waterproofing of soil would permit the use of clays for airfield and highway pavement bases, a great reduction in the erosion of unprotected clay slopes, construction of canal liners of clay, and construction of earth buildings.

One major obstacle to the wide use of waterproofers is the need to dry (or at least the desirability of drying) the soil. Those uses, such as for unprotected slopes, where the



Crucible Hollow Drill Rods bite into typical hard rock section along New York State's new thruway near Nyack, New York.

CRUCIBLE HOLLOW DRILL RODS

on the firing line —New York State Thruway

Chewing through hard rock sections of the New York Thruway, Crucible Hollow Drill Rods are helping to build this modern, high-speed highway across the state.

To make this motorist's dream come true meant careful planning by highway engineers—cooperation of dozens of contractors—top quality equipment. That's why large quantities of Crucible Hollow Drill Rods are being used. For experienced construction men *know* they can always depend upon Crucible Hollow Drill Rods for uniformly high performance in the field.

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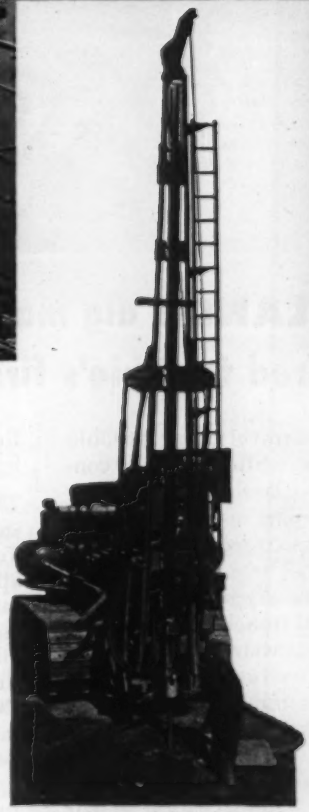

Joy Challenger drill and Crucible Hollow Drill Rod at work on New York State Thruway, Arden, N.Y.

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treated soil can be readily dried offer the largest potential market for waterproofers.

• **Use of silicones**—There are numerous waterproofers—ranging all the way from camel dung used by the Egyptians on their earth houses to the new and wonderful silicones studied in the laboratory. The water-soluble silicones and silanes can almost completely waterproof soil, as shown on p. 46. The soil was treated by thoroughly mixing the soil and chemical, and then air-drying.

Attempts to waterproof dried blocks of clay by coating the surfaces with silicone and then drying have not been very successful. Water gets back of the waterproofed surface through any untreated pinhole or abraded area, resulting in eventual disintegration of the entire block.

Minimum levels for complete treatment of soil are not much below 1% of the dry soil weight. At these high levels, i.e., 27 lb of silicone per cubic yard of treated soil, the present unit cost of the chemical is many times too great for uses such as earth houses.

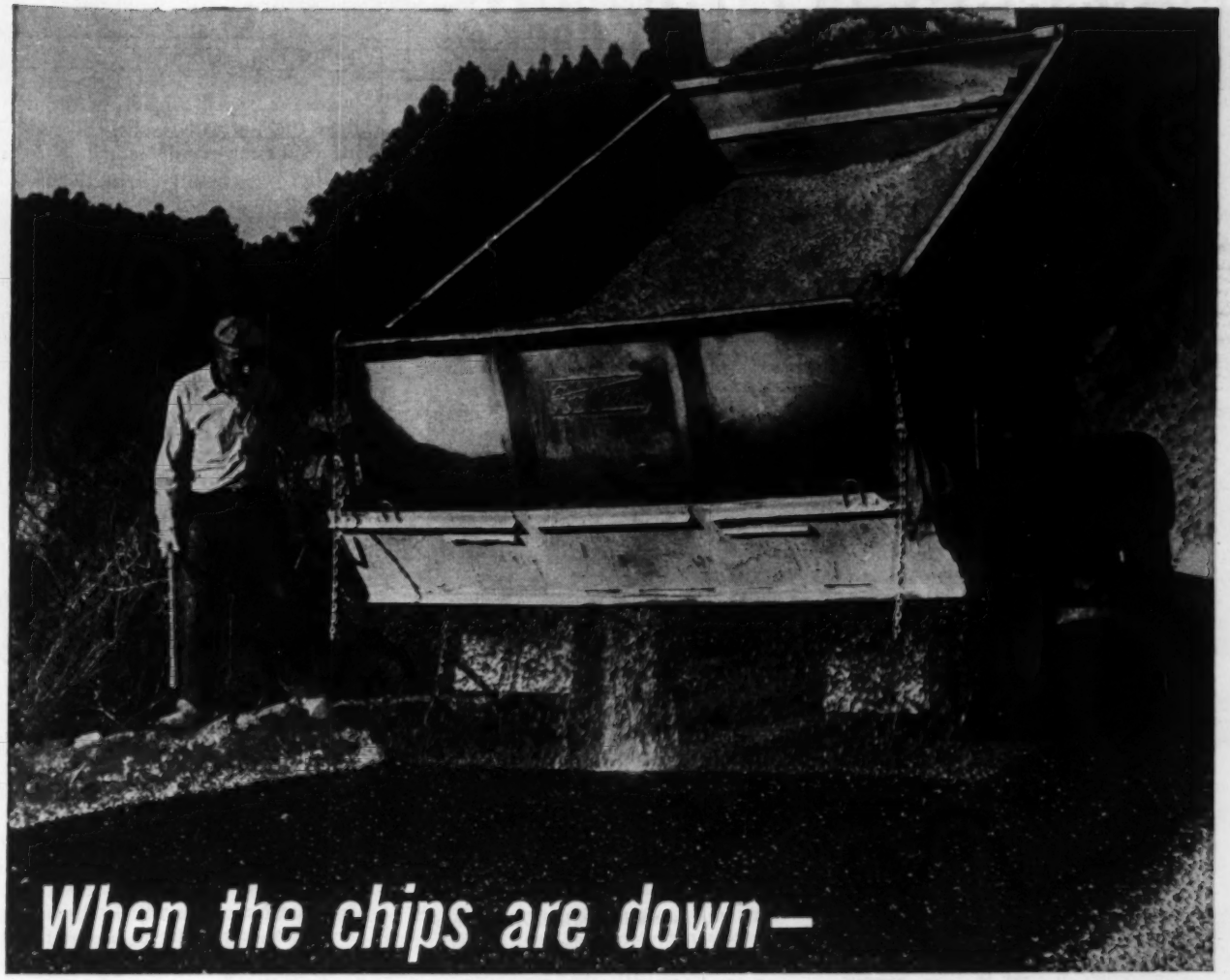
Laboratory studies by several groups (Union Starch and Refining Co., Iowa State College, and MIT) have shown that complex fatty quaternary ammonium salts are very effective waterproofers. The Union Starch study showed that a sample of Putnam soil treated with 0.1% dialkyl dimethyl ammonium chloride had a compressive strength of 1.4 kg per sq cm following water immersion while an untreated sample of the same soil had a corresponding strength of 0.3 kg per sq cm. Iowa State found that a soil treated with less than 0.1% of the salt had one and a half times the strength of the same soil treated with 10% of RC-1 asphalt.

The strength tests by both Union Starch and Iowa State were made on samples treated, air dried and then soaked. CBR tests run at MIT on samples treated and then soaked showed that a 0.1% treatment raised the resistance from less than one to over twenty-five.

These laboratory data indicate that fatty quaternary ammonium salts are worthy of field study.

• **Aggregants and dispersants**—Laboratory and field studies of aggregants and dispersants have progressed far enough to indicate that they have considerable promise for use in soil engineering. This is especially true of dispersants.

By increasing soil cohesion, aggregants in effect "dry" soils. Thus they can alter wet soils to make them more easily handled. A soil, for example, that in its natural state was too wet



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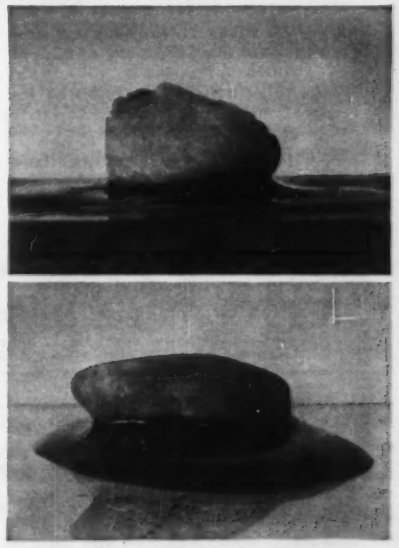
This superior performance plus the speed, ease and economy of using asphalt in emulsified form, makes Bitumuls the first choice of road-builders everywhere for surface treatment work.

Complete data and specifications on Bitumuls Surface Treatments and Armorcoats are available from our nearest office.



These laboratory photographs show the superior ability of Bitumuls to "wick-up" on the sides of cover chips. Top is a stone put down in an asphalt cut-back; lower, stone put down in Bitumuls.

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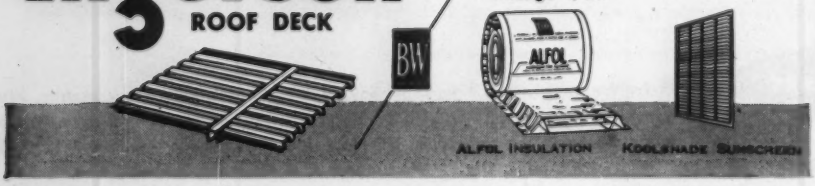


to be compacted could be "dried" with an aggregant treatment and then compacted. Chemically aggregated soils compact to a lower density and possess a much higher permeability than the untreated soils. By increasing cohesion and reducing water pickup, aggregants strengthen soils exposed to moisture. A 0.1% treatment of an aggregant raised the California Bearing Ratio on soaked silt from 1 to 10. The samples were not dried after treatment.

Some of the effective synthetic aggregants are: sodium polyacrylate carboxy methyl cellulose, salts of maleic acid and polyvinyl acetate, and various modified forms of starch. Unfortunately, they are expensive—30¢ to $1 per pound. Studies on salts containing the polyvalent cations aluminum and iron are in progress. While they are not as effective as the synthetic chemicals, they may permit more soil improvement per dollar. The synthetic polymers have received considerable field evaluation as soil conditioners for agricultural purposes but almost no field testing for engineering uses.

• **Fine-grained soil improved**—The relatively modest, but significant, effects which dispersants have on most of the properties of fine grained soils were described by the author in a paper before the Boston Society of Civil Engineers in 1954. Incorporation of a dispersant in a soil results in: an increase of compacted density; an increase of water resistance; a reduction of optimum water content; and reductions in compressibility, permeability, and frost susceptibility.

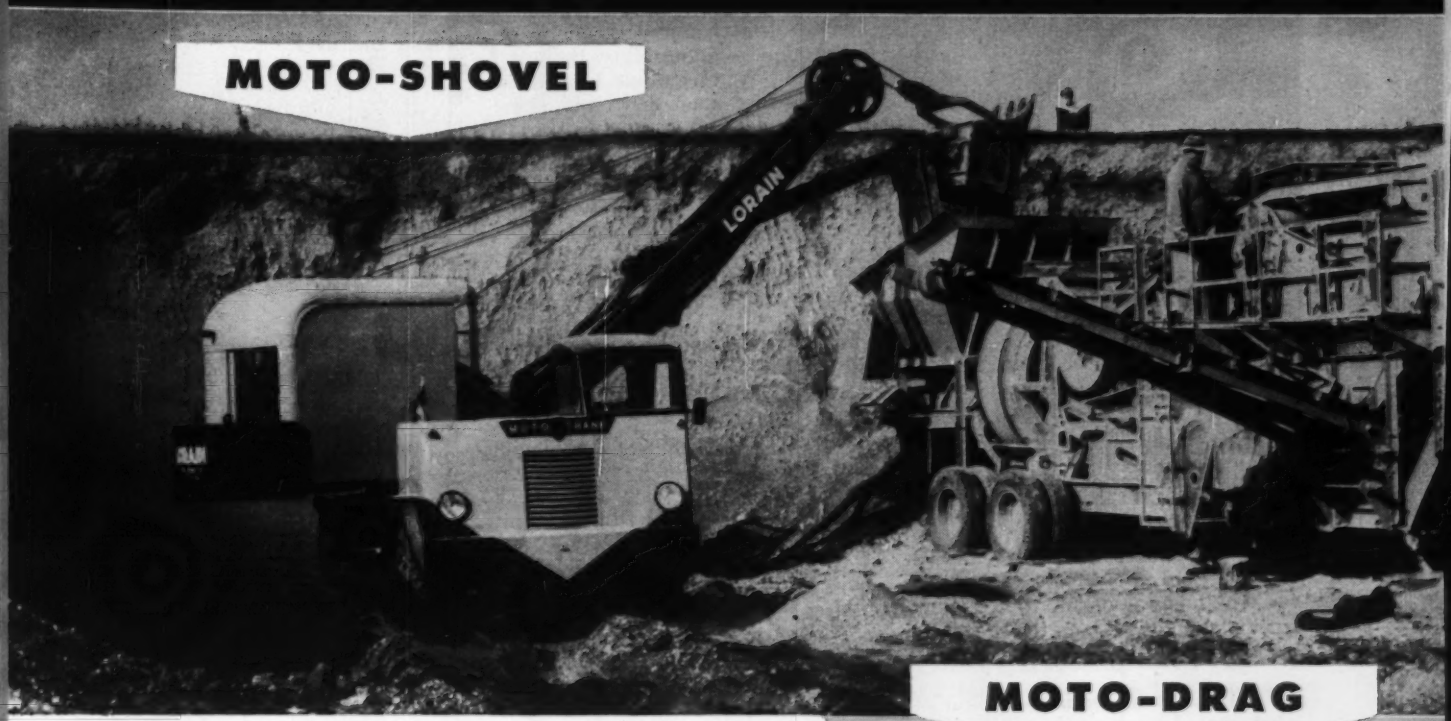
These beneficial effects of dispersants have on compacted soil come from the denser structure and more orderly arrangement of particles that are obtained when the particles are able to slide relative to each other more easily. The improvement is, therefore, permanent until some mechanical force disrupts the new structure.

Dispersants sell from $0.03 to over $1 per pound; they are effective at low concentrations, 0.1% to over 1% of the soil dry weight. At a typical treatment of 0.1% with a $0.10 per pound material, the chemical cost for a cubic yard of soil is $0.30. This figure is low enough to make dispersants economical soil additives.

• **Future possibilities**—There are now commercially available chemicals which will economically effect a modest improvement in soil properties. The engineer will some day have available a wide range of materials to treat soils to correct deficiencies they possess. These treat-

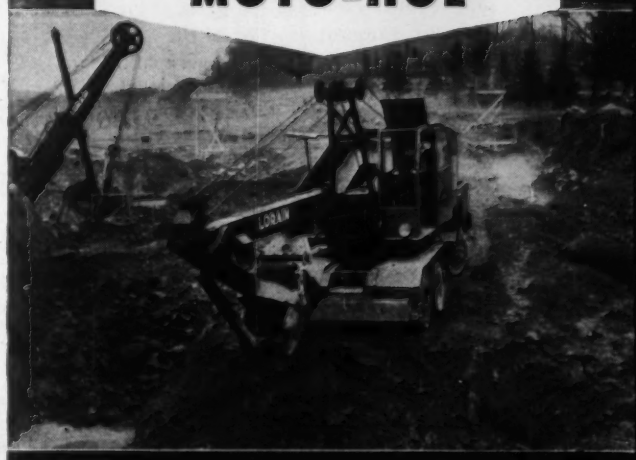
LOOK HOW THEY'RE DIGGING ON RUBBER TODAY!

MOTO-SHOVEL



MOTO-DRAG

MOTO-HOE



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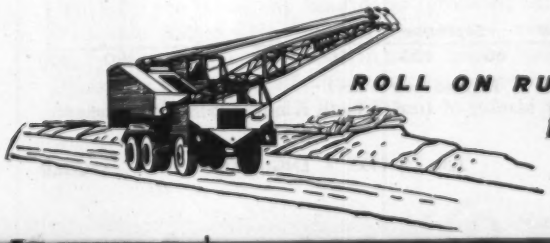


THEW LORAIN

ments should become a tool for soil alteration just as densification is now and will undoubtedly continue to be.

Before trace additives are widely and commonly used a number of things must occur:

(a) Education of engineers on the use of chemicals including their effectiveness and limitations.

(b) Development of more and better equipment for soil-additive manipulation.

(c) A more sympathetic reception to stabilization from those involved in construction, especially civil works.

There are several encouraging developments: interest and research efforts by producers of potential stabilizers and of equipment to manipulate soil; rapid progress in soil technology and other sciences of soil; the willingness to try new methods and materials displayed by some industrial companies in construction of their own facilities; and an increase in research by some highway organizations. Such trends should hasten the eventual wide use of soil additives.

• **Field use of dispersants**—Typical of what may be expected as more experience is gained with the use of trace chemicals in soil engineering work is a reservoir sealing job done under the author's supervision.

At Chisholm, Maine, the International Paper Co. has a six-acre lagoon for storing sulfite liquor. It was leaking so badly in 1952 that 27 of the 34 million gallons of liquor pumped into it escaped during the three summer months.

To check this leaking, the common methods of sealing such a reservoir were studied, but in the end the company decided to apply a one-foot thick blanket of soil treated with a dispersant. Such a blanket would cost only a fraction of any one of the other methods; it would have self-sealing characteristics the others did not; and it would not require the carefully prepared base that was needed for linings of portland-cement concrete, asphalt, or impregnated membranes.

The dispersant proposed to be used was sodium tetraphosphate.

Laboratory tests using this material showed that of the three available soils, a boulder clay would make the best blanket. This clay had 19% by weight of its particles finer than 0.002 mm, a liquid limit of 33% and a plastic limit of 19%. It had to be transported about four miles.

Treatment of this clay with the dispersant at the rate of 0.1% of the dry weight of the soil reduced the permeability to one-tenth of that of the untreated soil, and to a value considerably less than the design value. For minimum permeability, the water content of the clay would have to be slightly greater than that required for maximum density.

• **Construction of the blanket**—The lagoon blanket was constructed in two lifts, each lift consisting of the following steps:

1. Eight inches of soil were dumped and spread.
2. The dispersant (sodium tetraphosphate) was spread at the rate of 5 lb per 100 sq ft.
3. The chemical and soil were mixed with a pulverizer.
4. The mixture was compacted.

Because of the high in situ water content of the clay and the heavy rains which occurred during construction, the blanket was processed at a moisture content considerably above optimum.

After the second lift of the blanket was completed, it was given a 3 in. protective cover of gravel.

During construction, density and permeability measurements were made on undisturbed samples. They showed that because of the excessive molding water contents, the density of the blanket was below laboratory maximum and the permeability greater than laboratory minimum. The permeability was, however, less than the maximum permissible of 1 x 10^{-6} cm per sec.

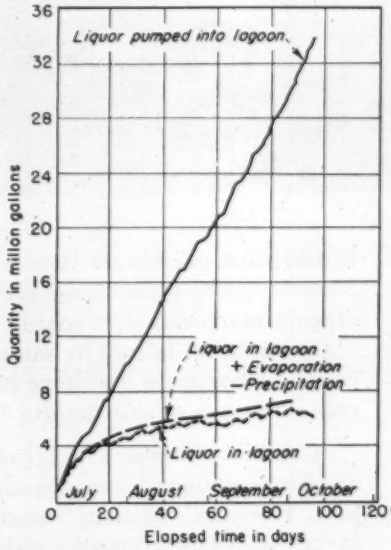
Tests made on the blanket after one year's use showed the soil had been densified by the seepage forces, and thus in better condition than it was immediately after construction.

To evaluate the performance of the lagoon blanket, the following measurements were made before and after blanket construction: quantity of liquor pumped into lagoon, liquor in the lagoon, rainfall, evaporation and levels in a series of wells between the lagoon and river.

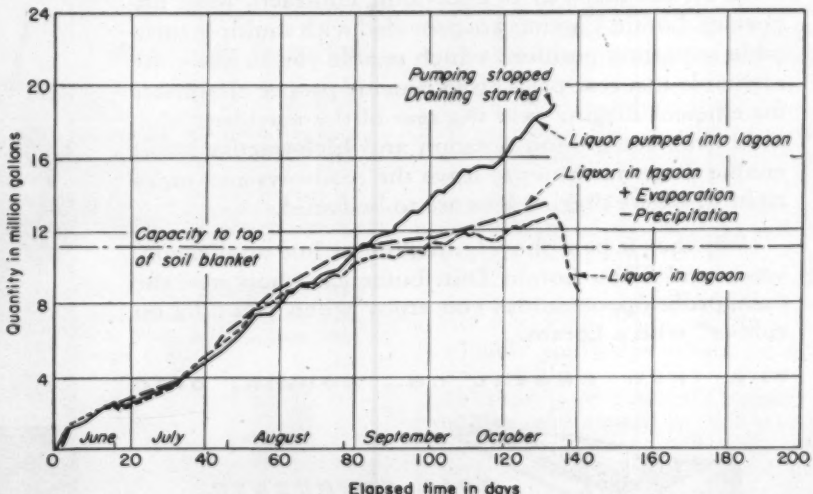
Before the blanket was laid, the loss of liquor was very high. Following completion of the blanket, the loss was too small to be measured.

Examination of the wells revealed that, prior to placement of the blanket, the level in the wells rose as the level of sulfate liquor in the lagoon rose. After placement, however, the level in the wells was independent of the level in the lagoon, indicating that the blanket was effective in dissipating pressure of stored liquor.

The chemically treated blanket one foot thick was as impermeable as an untreated blanket 10 ft. thick, yet it cost only 10% more than a similarly compacted layer of untreated soil only one foot thick.



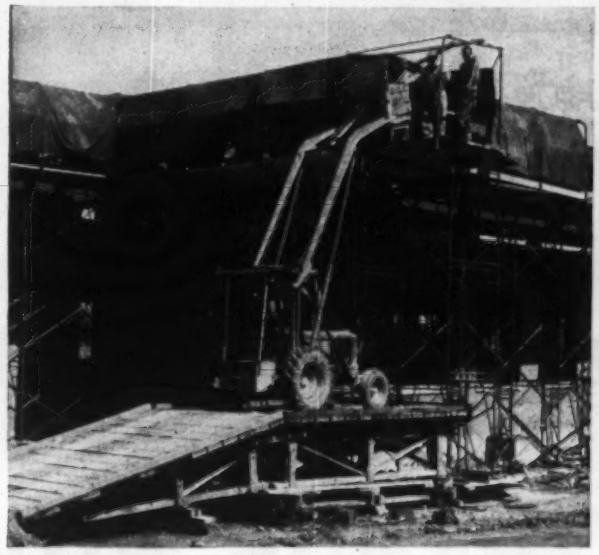
THE RATE OF LEAKAGE from the six-acre lagoon was high before the blanket of treated soil was laid.



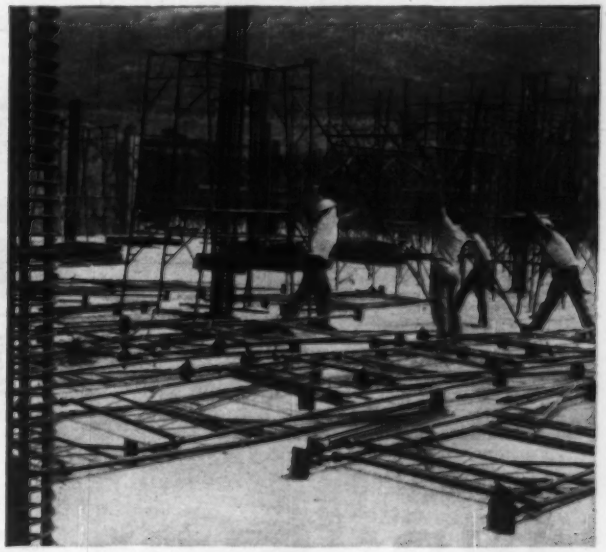
LEAKAGE in area protected by blanket of treated earth is now too small to measure.

(Advertisement)

Scaffolding Methods . . . by Patent Scaffolding Co.

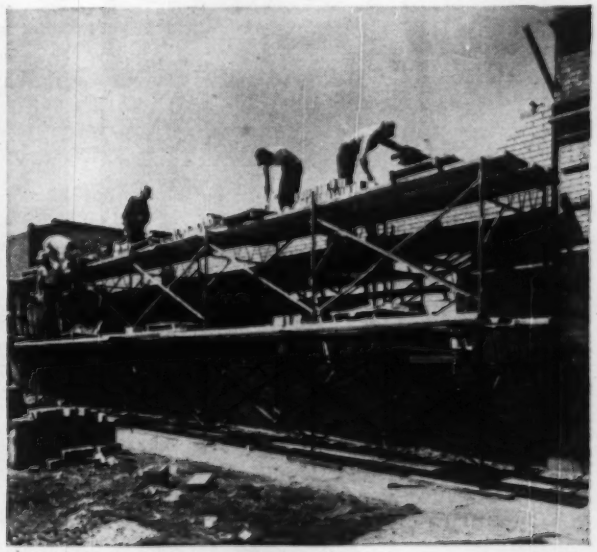


THE MECHANIZED WAY — Extra-wide "Trouble Saver" Sectional Scaffolding and a tractor with front-end loader and fork lift show how mechanization cuts masonry material handling costs on the Frontier School, Town of Hamburg, N. Y. Tractor lifts palletized brick up to scaffold where it is distributed to masons on brick buggies. Scaffold platform width is increased with 20-in. brackets to allow ample room for maneuvering brick and mortar buggies. 30-in. brackets on wall side give masons a clear working platform. Seigfried Construction Co., general contractor.



UP SHORE—Pre-assembled "Trouble Saver" Sectional Steel end frame units, in foreground, are raised after crossbraces have been attached for shoring job at the Broadway-Hale department store warehouse, Los Angeles. C. L. Peck Inc., general contractor, is using 6,000 of these frames plus 800 single-post Burton Shores to shore the 277,400 sq. ft. second floor slab. Frames were erected for one-third of the area at a time to support forms for 8" mushroom-type slab.

THREE 'BARROWS WIDE—Three wheelbarrows, two of mortar and one of brick, go up at one time on this 65-ft. "Trouble Saver" Sectional Hoist Tower in use on new apartment building in Fort Lee, N. J. Tower is lightweight, yet has a load capacity of 4,000 lbs. It is quickly erected from just four component parts: one-piece base unit, prefabricated steel end frames, braces and girts. End frames are quickly locked together.



SMALL JOBS, TOO—"Trouble Saver"® Sectional Scaffolding can be used to advantage on any size masonry job. For instance, on this typical small job in Chicago, General Contractor C. A. Klooster uses 60 5-ft. high "Trouble Saver" frames to keep both men and materials in efficient working position. 20-in. sidewall brackets, normally on wall side for mason's platform, are used here on the outside to support platform for handing up masonry materials.

To help you solve any scaffolding problem, PS offers a complete nation-wide engineering service—available locally. See the Yellow Pages in your 'phone book for the nearest Patent Scaffolding office or representative handling "Gold Medal" Scaffolds.

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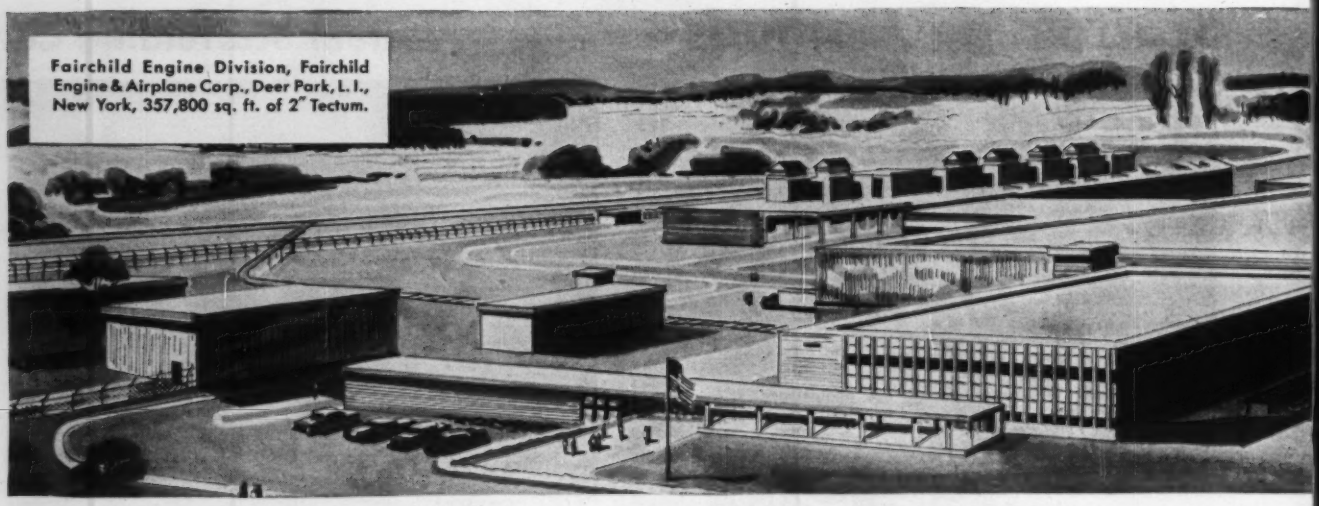

Fairchild Engine Division, Fairchild Engine & Airplane Corp., Deer Park, L. I., New York, 357,800 sq. ft. of 2" Tectum.

INDUSTRY EXPANDS WITH

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(above) Tectum wall insulation erected with any of several fastening methods conceals girts. Available in 2" x 30" and up to 120" long. Interior and exterior walls can be erected simultaneously.

(right) Tongued and grooved Tectum deck with factory applied roofing felt can be quickly laid on any type of framing. Built-up roofing may be applied immediately. Available in four thicknesses and eleven standard sizes.

Tectum®

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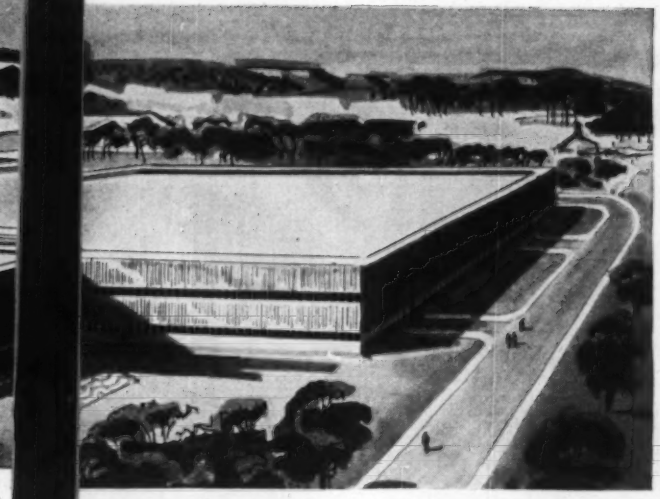
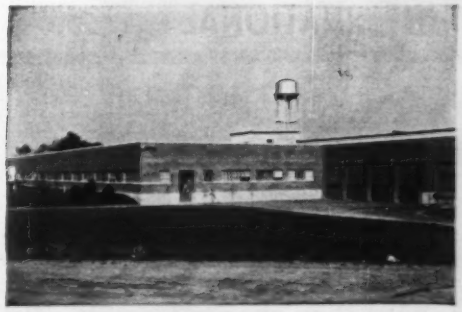
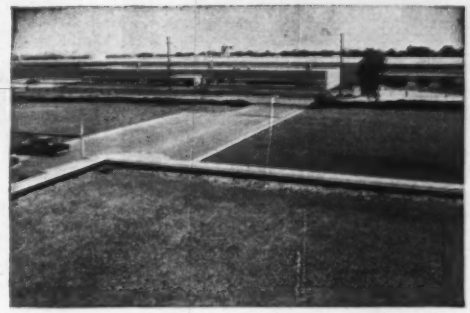


The Wesleyan University Press Inc., Columbus, Ohio, 125,883 sq. ft. of 2" Tectum plank for roof deck.





Simmons Mfg. Co., Columbus, Ohio, 222,243 sq. ft. of 2" Tectum plank and 16,302 sq. ft. of 3" Tectum plank for roof deck.

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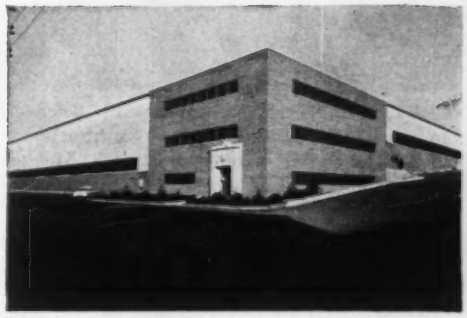
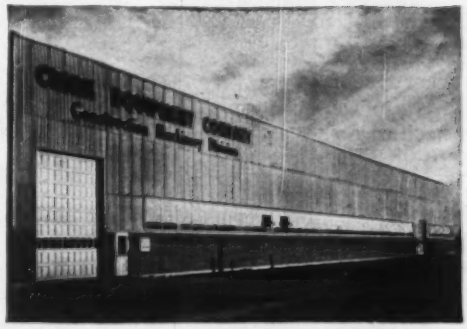


Parish Pressed Steel Division of Dana Corporation, Reading, Pa., 19,244 sq. ft. of 2" Tectum plank for wall insulation.



Clark Equipment Company, Construction Machinery Division, Benton Harbor, Mich., 45,630 sq. ft. of 2" Tectum plank for wall insulation.

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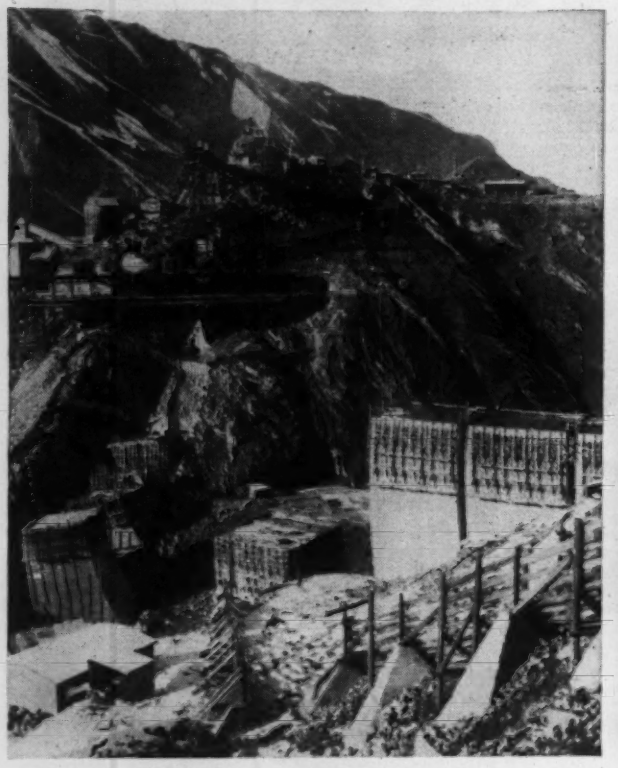
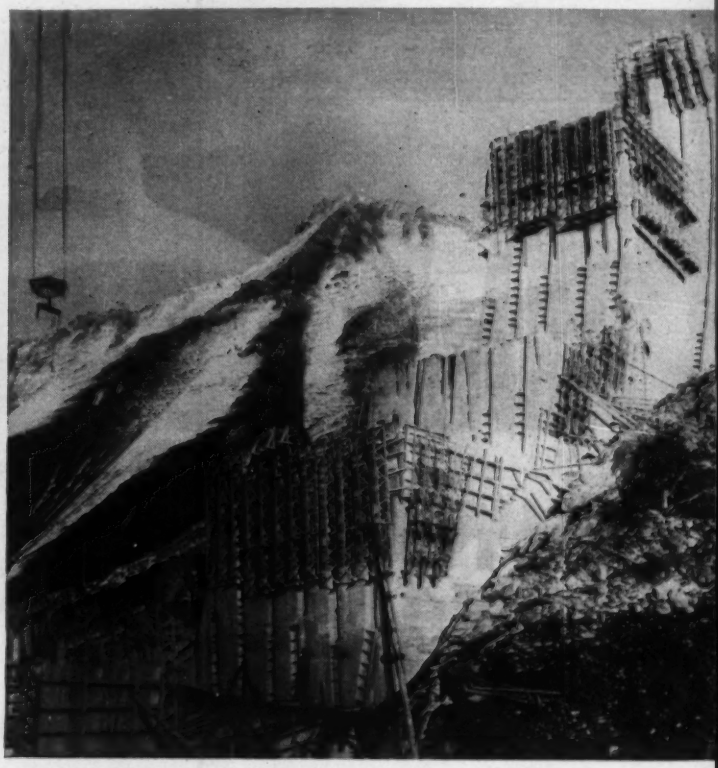
Worthington Corporation, Decatur, Ala., 49,632 sq. ft. of 2" Tectum plank for wall insulation. 13,955 sq. ft. of 3" Tectum plank for roof deck.



CONCRETE PLANT has been precariously perched on a rocky ridge to provide material for the dam constructions. Here the Drossen Dam is shown in foreground while Mooser Dam is a short distance to the right of the concrete plant.



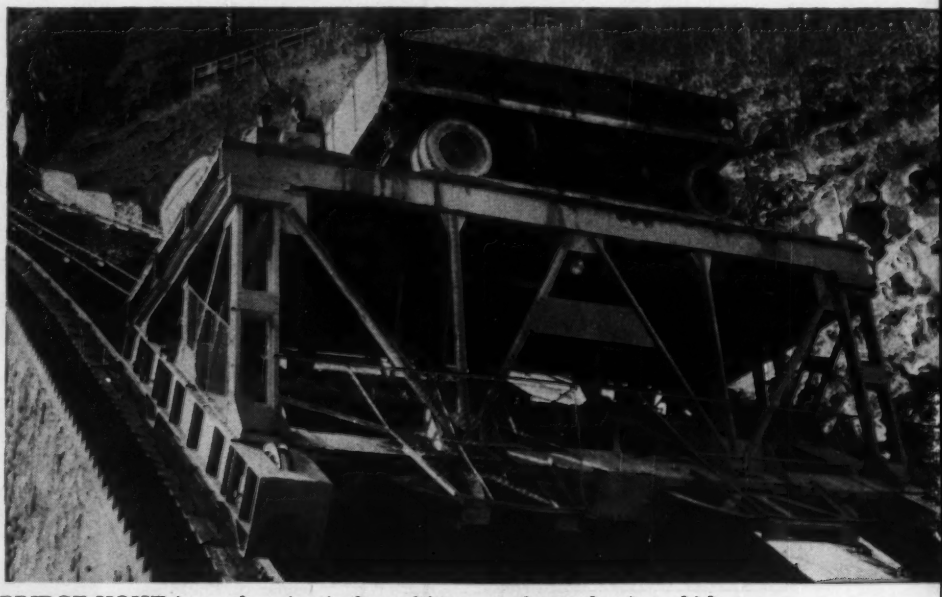
GIANT STEPS mark the stage of completion at the Drossen Dam which, when completed, will share in holding back the waters of the Mooserboden Reservoir. Water is pumped from a lower level to the reservoir to provide water for winter power.

Pumped Storage Hydro Project Well On The Way

On Austria's Kaprun River, near the German and Italian Borders, one of the world's largest pumped-storage hydroelectric projects is scheduled for completion later this year (ENR Oct. 8, 1953, p. 225).

When completed, the Glockner-Kaprun project will include 15.6 mi of tunnels, three reservoirs with a combined storage capacity of 142,000 acre-ft, two generating stations and two pumping plants.

Because most of Austria's river flow comes from areas which are extremely cold in winter, the supply of water for power generation is severely curtailed during that season. This combined with the fact that power demand is often three times as great during the winter months creates a problem that can most practically be solved by a pumped storage system. At present, a considerable part of the winter power in Austria must be expensively



BRIDGE HOIST in another view is shown lifting a trailer to the sites which are over 7,800 ft above sea level. The hoist transports not only the workers, tools and equipment required on the job but also hauls the automobiles of sightseers.

generated by thermal means. Thus, winter charges are much higher than in summer, and the feed back system can operate profitably.

With the system, water is pumped from an intermediate level above a main power house to a high level storage reservoir. The water is pumped in summer when water supply is more than adequate and low cost power can be used.

Some pumped-storage systems already in operation in Austria can operate economically by using one kwh of summer power to produce only 0.6 kwh of winter power. It is estimated that the Kaprun project will make money by supplying 600 million kwh in the high rate winter months and only 200 million kwh in the summer. Thus power totals more than 10% of Austria's yearly use.

On the Glockner-Kaprun project, the middle reservoir is retained by the Mooser and Drossen Dams at Mooserboden. Progress at this site is shown in the accompanying photographs.

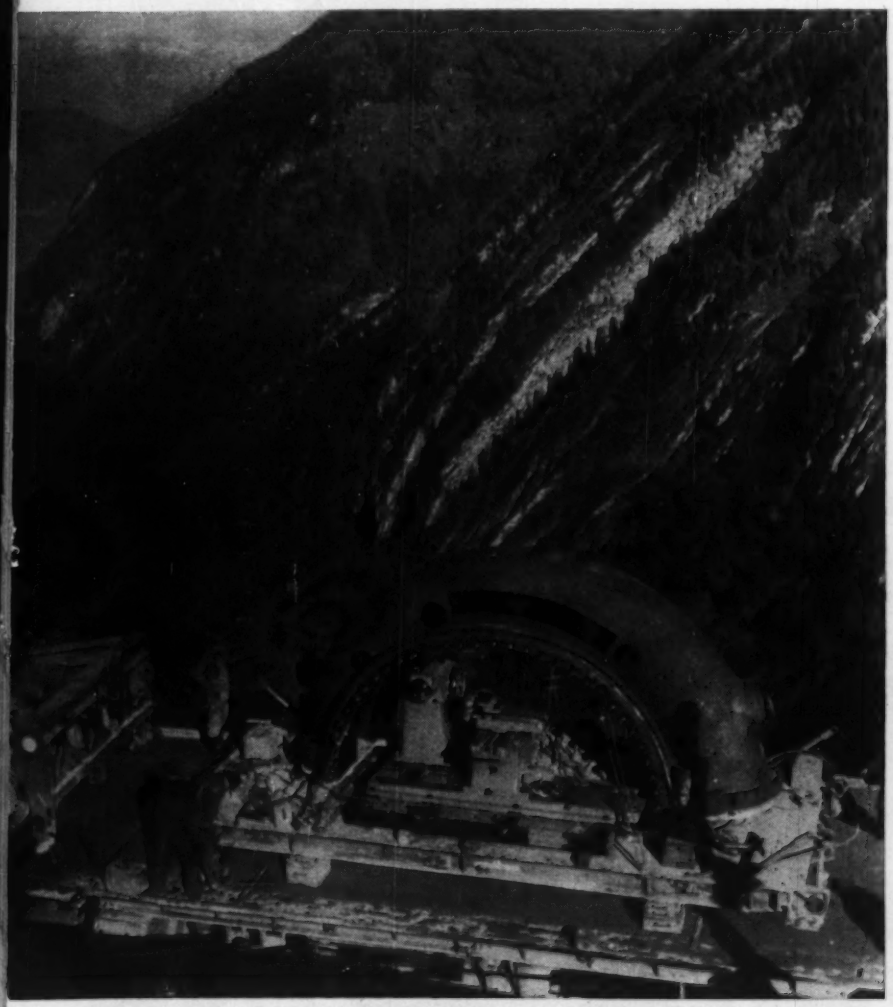
Plan Filling In Harbor To Enlarge Lebanese City

Long-discussed plans for creating more usable land for the crowded Lebanese city of Beirut seem to be close to fruition, a survey of government and private interests indicate.

What is being discussed is filling in part of the city's sea-front—from the area of St. George Hotel Bay to the tip of the port area—reclaiming about 600,000 square meters of land that could be used for housing and business and to provide good communications to the waterfront area.

Local sources said that French firms will share about 40% of the cost of the project, the rest to be subscribed by private Lebanese capital, or by outside banking and commercial interests. One legal problem stands as a block however: A large section of the waterfront area under consideration is state-owned, and it is believed laws must be enacted to clear title to the area.

(*International continued on page 54*)



MECHANICAL MOUNTAIN GOAT hauls a part of one of the two 78,500-hp pumps which will be used on the project's upper stage. The bridge hoist is 400 ft long and in places approaches a 90% gradient. Hoist capacity is 60 metric tons.

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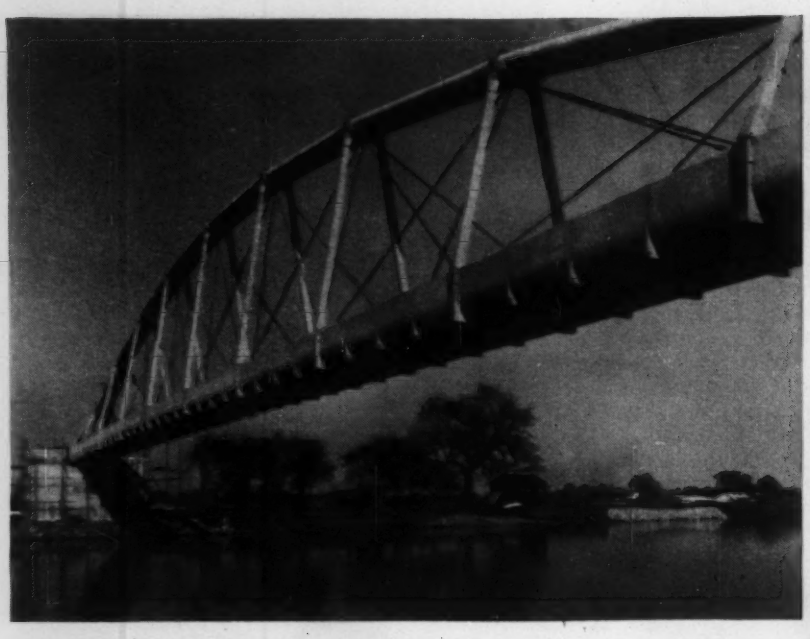


Open web bowstring design in prestressed concrete was chosen for the construction of pipe-carrying . . .

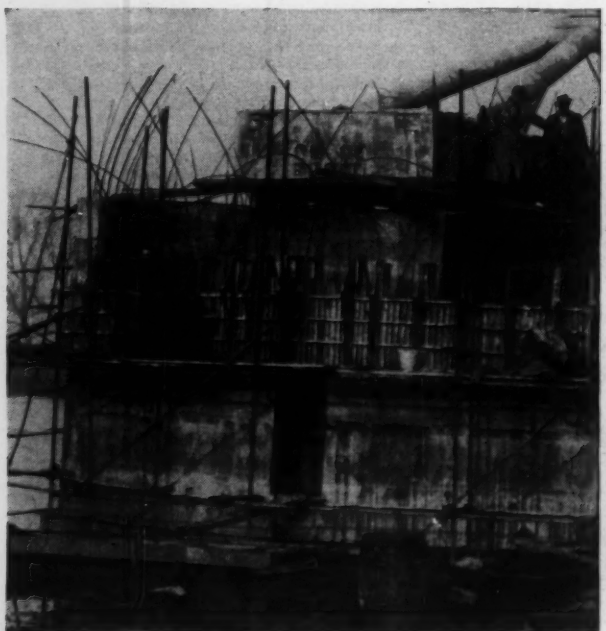
Bridge Built on Shore, Floated Into Place

A new prestressed concrete bridge of striking design has been built at Gunthorpe near Nottingham, England, to carry water mains across the river Trent.

The special design of the bridge was largely determined by the fact that the heavy traffic on the river had to have free passage during construction. A bridge sufficiently light to be built on the bank and then launched across the river was needed and an open web bowstring design in prestressed concrete was chosen to fill this requirement.

The bowstring is designed with a single top boom, a bottom tie member consisting of two stiffening parapet girders with a light deck between, and triangular hangers joining these members.

The bridge has a single span of 250 ft—the river is 234 ft wide at this point—and an overall width of 10 ft; the clear deck width is 7 ft 9 in. The soffit of the deck is 20 ft above the normal level of the river and the rise



PRESTRESSED concrete walls were built to project abutments.

PONTOONS carry end of bridge as it is floated into place.

at mid-span between deck and boom is 28 ft.

The two 21 in. diameter water pipes are made in 25-ft lengths and the design of the bridge was based on this dimension. They are actually carried by the concrete hangers which are placed at 25 ft centers coinciding with the joints in the pipes to make this possible. The boom and girders are built up in 25 ft bays between the hangers. Each hanger is prestressed with one 12-wire cable.

The slender arched boom section is a hollow rectangle with rounded ends with 3-in. thick walls and a 3-in. thick central web. It is 3 ft 4 in. wide and 1 ft 4 in. deep overall. Each of its ten structural bays is made up of four sections of precast concrete, each approximately 6 ft long, which were assembled and stressed together on the ground with one 12-wire cable. When completed, each bay was lifted into position and no further prestressing was applied to the boom as a whole. At either end the boom divides into two solid arms, circular in section, which are cut away to fit over the pipes and allow them free passage through the end block and into the abutment. These arms bear on hinges on the end block. The end blocks themselves are of heavily reinforced concrete cast in situ and prestressed in the transverse direction with fourteen 12-wire cables.

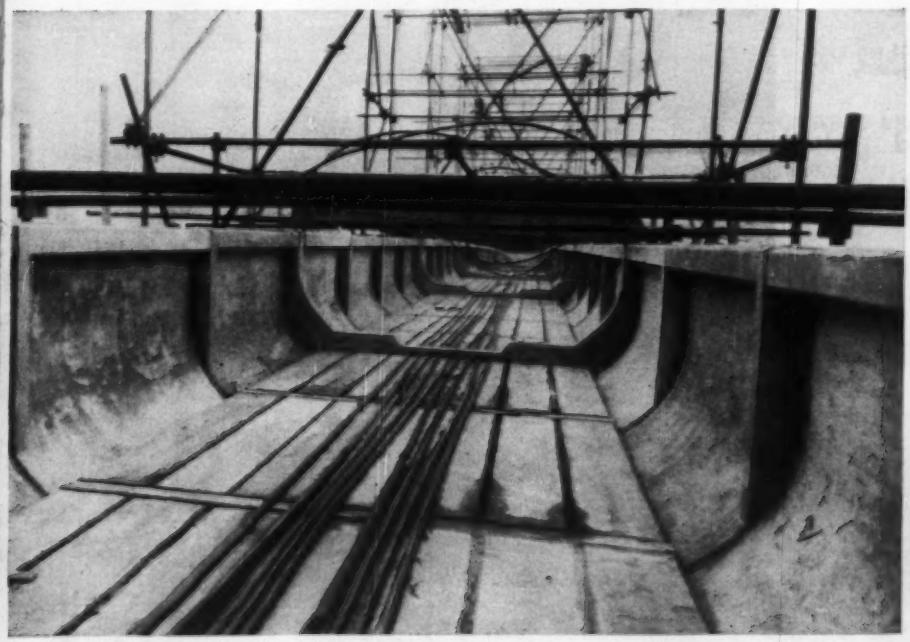
A single slender boom of 250-ft span needs some form of bracing if it is not to buckle, so mild steel bars crossing diagonally between the hangers have been used. The bars are protected by zinc paint.

The deck and girders together form the tie member. Like the boom, the prestressed concrete girders are made up of four precast sections, approximately 6 ft long, within each bay. They are 3 ft 8 in. deep and 3 in. thick with a top flange, projecting on the inner side only, containing a groove for prestressing cables. The web of each girder is straight for the greater part of its depth and forms the parapet of the bridge and a protection for the pipes, but at the bottom it curves under to meet the deck itself. The tie member is braced by precast prestressed concrete units spanning between the girders, and straight ones at the joints between the 6 ft sections within each bay. The former were stressed with a 12-wire and the latter with a 2-wire cable.

As the weight of the pipes is taken by the hangers, the deck itself could be designed to carry only such light and occasional loads as those of foot traffics or snow. It was constructed with hollow units of precast concrete, each 11 in. wide, 4½ in. deep and about 6 ft long, with walls and flanges ½ in. thick, spanning the transverse braces.

When the deck and girders were assembled they were prestressed together with fifteen 12-wire cables, three of which lay in the groove in the top flange of each girder and the other nine centrally located on the hollow precast concrete units. The anchor-

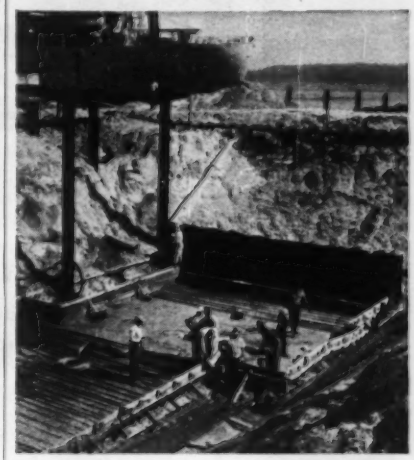
(Continued on page 58)



BRIDGE DECK is wide enough to carry two 21-in. pipes. Sheathed cables are shown.

HOW TO HANDLE
WET JOBS

MUNICIPAL POWER PLANT STRUCTURE
Jacksonville, Fla.
Contractor: George D. Auchter Co.



WELLPOINTS LOWER WATER OVER 20 FT IN ONE LIFT

WHEN CONFRONTED with the problem of draining ground water to such a depth, most contractors assume that a costly 2-stage wellpoint system will be necessary. Today it is possible to avoid these costs, thanks to the development of improved new high-lift pumps (available only through Griffin).

• On the above job, for example, one such high-lift electric pump lowered the ground water from elevation 101 to elevation 80.7 in a single lift. Photo shows the bone-dry excavation, with men working 20 ft below adjacent St. John's River.

• Another feature of this job was the engineers' expert planning and placement of points, giving contractor trouble-free results in difficult soil—fine sand with layers of muck and hardpan.

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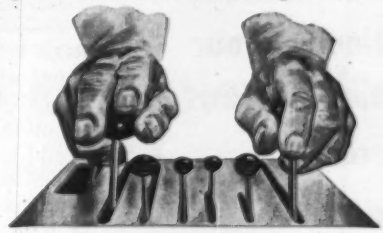

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- **ALL CLUTCHES ARE INTERCHANGEABLE** (within each model) with exception of front drum reversing clutch on HC-58 and HC-68.
- **INDEPENDENT, RAPID BOOMHOIST** with power raising and power controlled lowering through Speed-o-Matic boomhoist and lowering clutches is standard on HC-88, HC-98 and HC-108. Available for the HC-58 and HC-68.
- **PATENTED RETRACTABLE HIGH GANTRY** is quickly raised or lowered under power. Raised, it reduces stresses on boom and boomhoist cable. Standard except on HC-58 and HC-68.
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- **COUNTERWEIGHT REMOVAL DEVICE** using Speed-o-Matic hydraulic jacks, speeds removal and installation of counterweight. Available on HC-88, HC-98 and HC-108 only.
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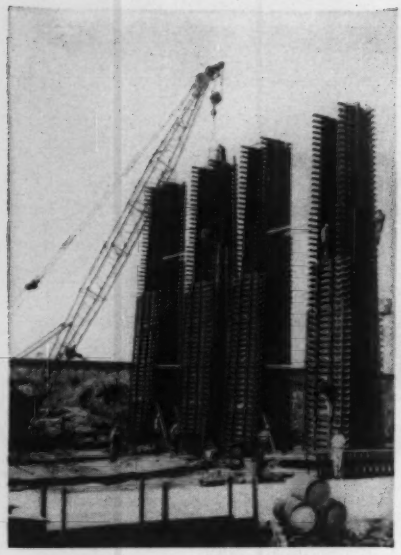
LINK-BELT SPEEDER

Link-Belt Speeder Corporation, Cedar Rapids, Iowa 13,880

Builders of a complete line of crawler and rubber-tired shovel-cranes



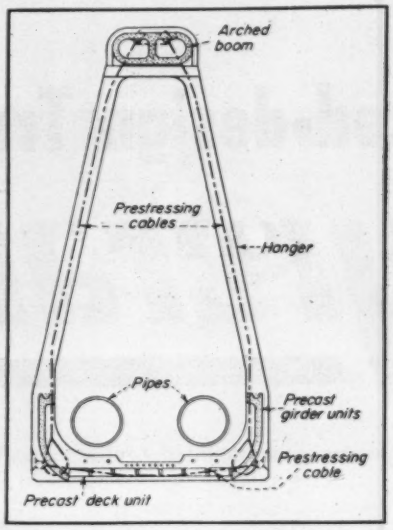
99 ft. Continuous Pour Using Richmond Tyscrus Believed Record

M-C & S designs forms for pour without interruption

What is thought to be the highest continuous pour in the area was made by Merritt-Chapman & Scott on its pier construction for the Newark Bay Bridge. For each of the 41 piers on the Newark side of the bay, and the 16 piers on the Bayonne side, forms were designed for a 10′ liquid head and were set to the full height of the pour. Richmond Tyscrus were used throughout; 123 1″ 4-strut Richmond Tyscrus holding the highest placement – 99′ 9⅜″. Concrete was poured to the maximum design strength of tie rods and forms, and every column went up without incident.

For speeding all types of concrete form work, the extra safety margin of Richmond Tyscrus counts heavily. The actual load strength of Richmond Tys far exceeds their published load. For instance, severe performance tests conducted by Brooklyn Polytechnic Institute show that 1″ 4-strut Richmond Tyscrus (published safe load strength 24,000 lbs.)—identical with those used on the Newark Bay Bridge—actually test out at 38,000 lbs.

Hangers, Screed Chairs, Lagstuds and all Richmond equipment are made with the same professional attention to the contractor's needs as are Richmond Tyscrus. Write for the 1955 Richmond Catalogue which details Richmond products and their many uses. It can save *you* time and money on your next job. Address:—RICHMOND SCREW ANCHOR COMPANY, INC., 816 Liberty Avenue, Brooklyn 8, N. Y., or 315 South 4th Street, St. Joseph, Mo.



CROSS SECTION shows position of prestressing cables in hangers, members.

ages of these cables are contained in the end blocks.

The permanent abutments are vertical slabs of prestressed concrete; one is fitted with hinges at top and bottom which allow for expansion and rotation of the bridge; the other has a hinge at the top to allow for rotation. The abutments are founded on reinforced concrete slabs placed on piles. Around each abutment a 5 in. thick prestressed concrete wall was built to protect the pipes and an approach ladder.

The whole bridge was built up on the north bank of the river and then launched across it and supported on temporary steel abutments while the permanent concrete abutments were being built. A length of railway line was laid leading down to the river on the north bank on which two trolleys were placed. Between these, scaffolding was erected and the bridge built at a level high enough to allow the river to be opened to traffic immediately after the bridge had been launched and secured to the temporary abutments. When the construction was completed, the railway track was extended on to a timber jetty built on the south bank where a temporary abutment was erected. The leading trolley carrying the south end of the bridge was then moved on to a pair of pontoons carrying rails matching those on the jetty. The pontoons were then hauled across the river by winches and the south end of the bridge was rolled onto the landing up to the abutment. The second temporary abutment was then assembled around the north end of the bridge and it was jacked up to the abutments to a height of 5 ft above its final level so that it could finally be placed on the permanent supports without any sideways movement which might set up unpredictable stresses and strains. The whole weight of the structure carried across the river was nearly 200 tons.

These operations were the only part of the whole construction which required the closing of the river Trent to traffic. After they were completed, the river was opened again while the permanent abutments were built.

Ultrasonic tests were carried out on the concrete of the boom to determine the modulus of elasticity to verify the buckling calculations.

In testing the completed bridge, water from the river was pumped into the box formed by the end blocks, parapets and deck to 1¼ times the working load. Deflection was 1½ in., and there was complete recovery when the load was removed.

This bridge was built for the Water Department of the City of Nottingham, England. Design was by the Prestressed Concrete Company Limited, London; Crowley, Russel & Co. Ltd., London, were the main contractors; the Croft Granite Co. Ltd., London, were sub-contractors for the precast concrete; the Franki Piling Co. Ltd., London, drove the piles and the ultrasonic testing was done by Cement and Concrete Association, London.

U. S. Firms to Build Peru Housing Development

Two U. S. contracting firms—the Richardson Construction Co. and Valorys Engineering Co., both of Fort Lauderdale, Fla.—have received contracts for construction of a $50 million government-sponsored housing project in Peru.

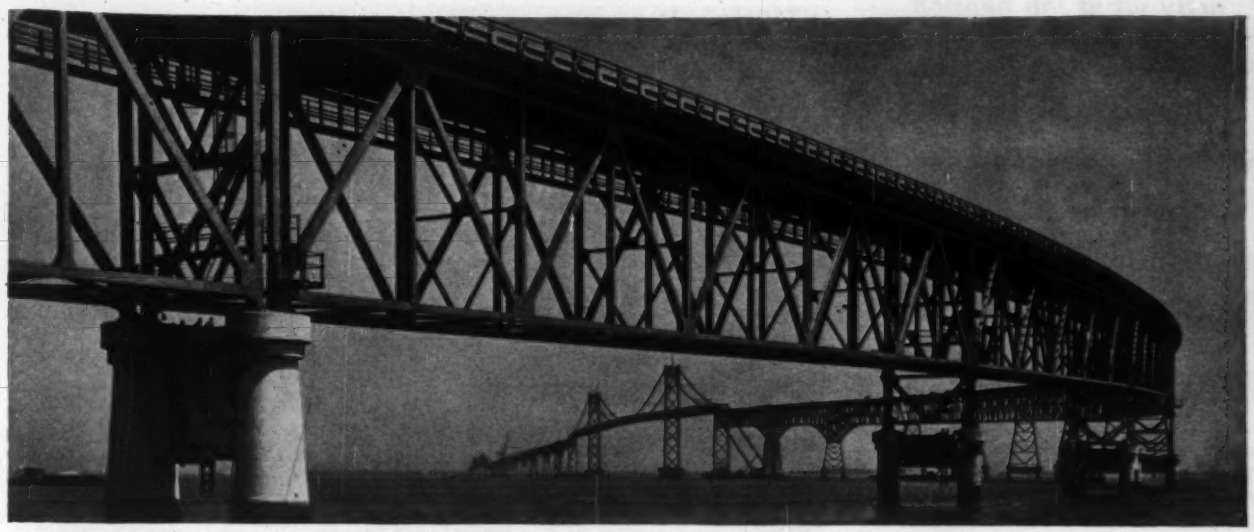
The contract covers construction of 15,000 housing units at several locations in Peru. The two contractors—both of whom have large forces now at work in several South American republics—will assist in financing.

Mexico Hydro Under Way

The first phase of what government officials call the largest hydroelectric project undertaken thus far in Mexico will be completed by the end of 1958, the Federal Electricity Commission has announced.

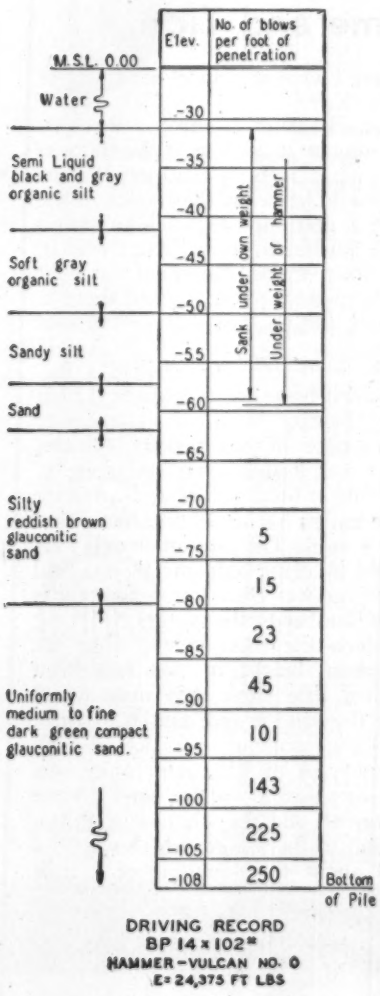
The job is a hydro plant at Tecuanteplec, on the boundary between the states of Puebla and Veracruz, which will produce 400,000 kw. Construction of the $20 million plant started in 1954.

(*International* continued on page 60)



J. E. Greiner Company, of Baltimore, designed and supervised construction of the Chesapeake Bay Bridge for the Maryland State Roads Commission.

Steel H-Piles Prove Sound as Friction Piles for Chesapeake Bay Bridge



DRIVING RECORD
BP 14 x 102#
HAMMER – VULCAN NO. 0
E = 24,375 FT LBS

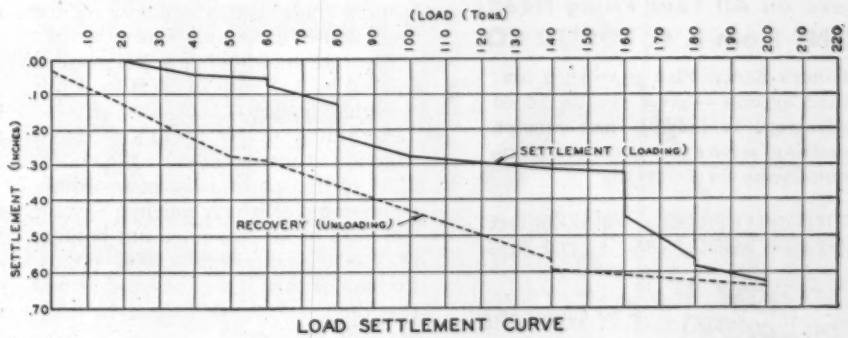
The sub-structure of the 4-mile-long Chesapeake Bay Bridge connecting Maryland's Eastern Shore with the mainland consists of 124 concrete piers supported on piles. Some of these piers are in water up to 90 ft deep.

All of the deep piers rest on steel H-piles used as friction piles. They were driven underwater through platform templates secured to the bay bottom. Elevation of pile cut-off was near bay bottom. The concrete was placed in huge permanent steel forms lowered to the submerged platforms.

At the bridge site bedrock lies so far below the surface that it could not be used for foundations. However, within the practical limits for H-piles is a stratum of medium to fine compact sand. A comprehensive program of loaded test piles proved that, when driven into this stratum, H-piles developed very high resistance.

Shown below is the load settlement curve for one of the test piles, driven 35 ft into the compact sand. With a test load of 200 tons the net settlement after rebound was only 0.024 in.

Based upon the information from this and numerous other test piles, the engineers, J. E. Greiner Company, of Baltimore, designed the foundations of the Chesapeake Bay Bridge using H-piling. Bethlehem furnished approximately 15,000 tons of steel H-piles for the bridge's sub-structure.



LOAD SETTLEMENT CURVE

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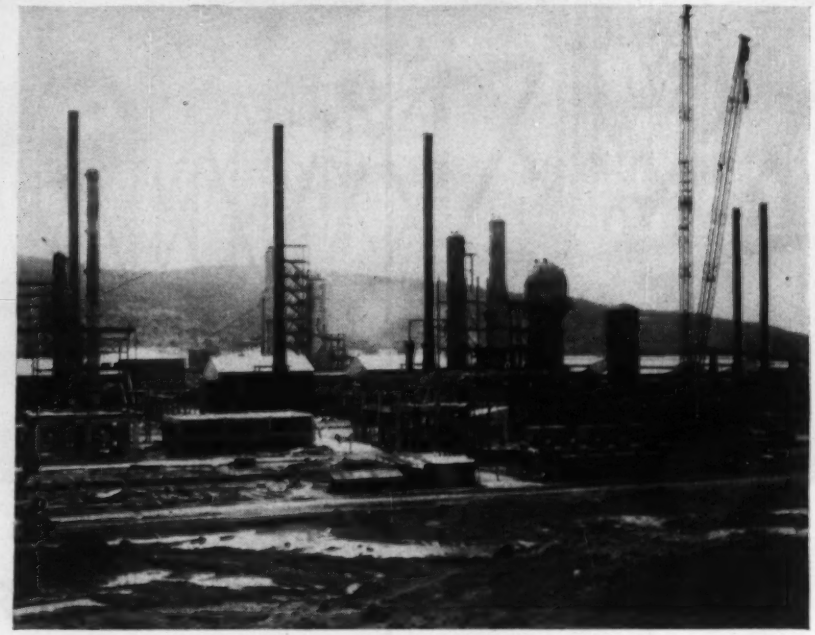


REFINERY CONSTRUCTION was in for added expense until the tides gave a hand.

Bombay to Trombay . . .

Contractor Waits for Time and Tide

Faced with the problem of moving extremely heavy components for a petroleum refinery in India where existing roads and heavy transport equipment were inadequate, an American construction firm put the tide to work to get the pieces to the job quickly and safely.

The job was a new $45 million refinery for the Burma-Shell company at Trombay Island, near Bombay. The problem for The Lummus Co., contractors, was to get heavy refinery vessels to the site—and it was a problem complicated by the fact that Trombay Island is almost completely surrounded by tidal lands that extend seaward for more than a half mile. The tidal area is dry and muddy at low tide, but is covered by water up to 16 ft in depth at high tide stages.

According to D. B. O'Kain, construction superintendent, the possibility of transporting the heavy equipment—some of which weighed 96 tons —by road or rail was ruled out because of low clearances at several points. Because of this, is was believed at first that the vessels would have to be fabricated at the jobsite.

• **Tide to work**—In an attempt to save this expense, the contractor made a careful study of the tide variations prevalent in the area, and decided that the tide could do the moving job for him.

Here's what was done, according to Mr. O'Kain:

A sand island—in effect, a sheetpile box—was built as close to the shore as possible, at such an elevation that its top would be below the surface of the water at maximum high tide to permit floating a heavily-loaded barge over it. A concrete-topped abutment was built out from the Trombay Island shore to a point that was just short of the sand island.

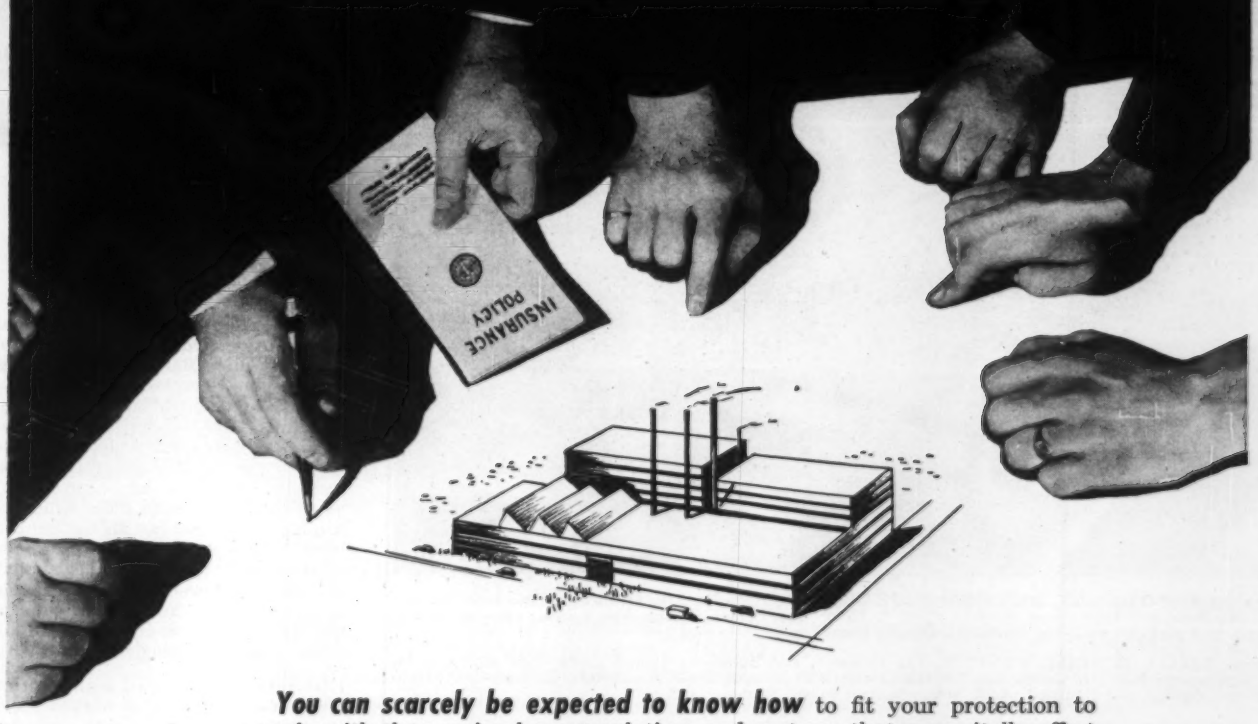
The contractor then rented a flat-bottomed barge, 40 ft wide by 120 ft long, drawing 30 in. of water empty with a rated 400-ton capacity. On this barge was loaded a rig consisting of two rubber-tired trailers and a tractor —the trailers having 40 pneumatic tires over 5 axles. The pressure vessels were loaded by crane onto the trailers, and the barge was then towed four miles from Bombay to the island.

When the time showed that the maximum height of tide had been reached, the barge was maneuvered over the sand island, and held there until the receding water left it high and dry. A prefabricated bridge was thrown across from the barge to the abutment, and the whole load driven off and to the jobsite, which was situated about three-quarters of a mile away.

The process was repeated three times during the erection of the refinery, Mr. O'Kain said.

YOUR BUSINESS PROTECTION OVERSEAS

calls for Expert Planning



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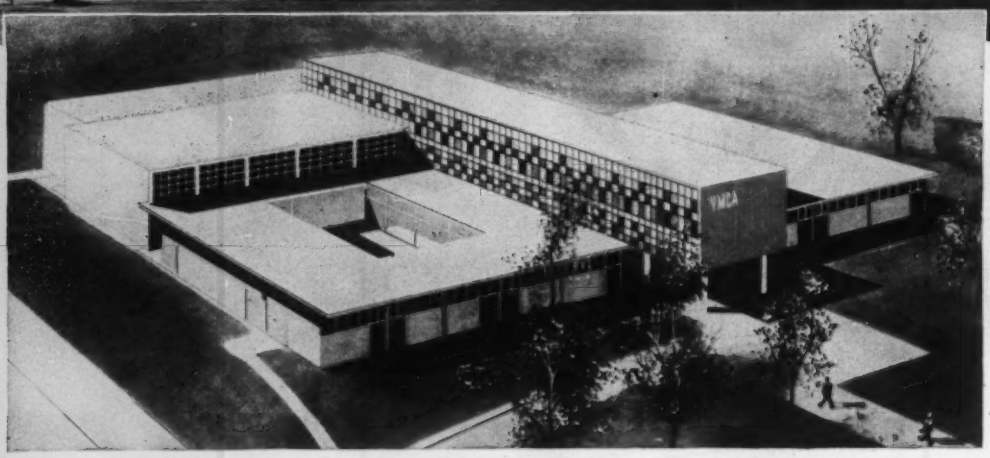

Top illustration, MEN'S DORMITORY, SOUTHERN STATE COLLEGE, Magnolia, Ark. Architects: Wittenberg, Deloney & Davidson, Little Rock, Ark. Contractors: Peterson, Garbi & Joseph, Inc. Lupton Curtain-Wall System, Type H. Module 3'8". Fixed glass and projected in-at-top ventilators. Outside glazed.

Lower illustration, Y.M.C.A. BUILDING, CHESTER, PA. Architects and Engineers: Howell Lewis Shay & Associates, Philadelphia. Contractors: Nason & Cullen, Inc. Lupton Curtain-Wall System, Type H. Module 3'. Projected out-at-bottom ventilators. Opaque and insulated panels with porcelain enamel facing.

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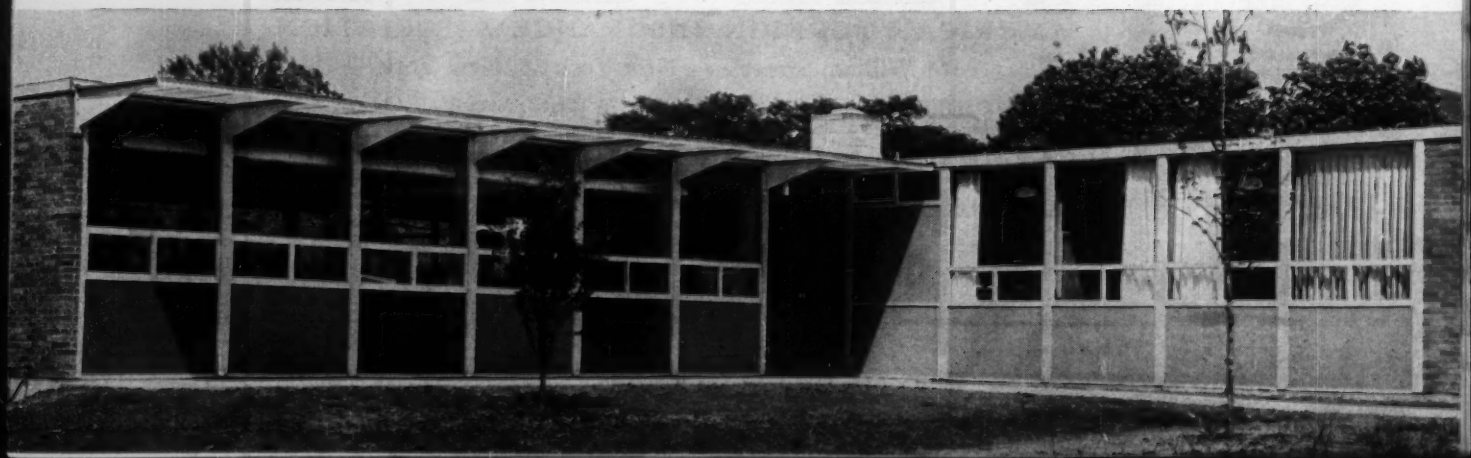
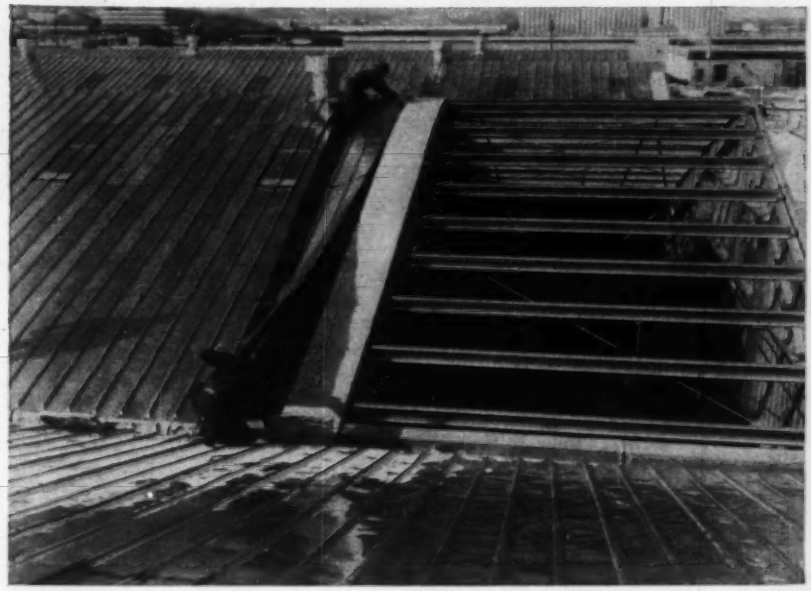
OFFICE BUILDING OF SARGENT-WEBSTER-CRENSHAW & FOLLEY, ARCHITECTS, WATERTOWN, N. Y. Contractor: Wager Bros. Lupton Curtain-Wall System, Type H. Module 5'8". Fixed glass and projected in-at-top ventilators. Outside bead glazed.





ROOF SHEETS are first bolted together then laid in place over vapor barrier type insulation previously placed over frame.

System Speeds Insulation Installation

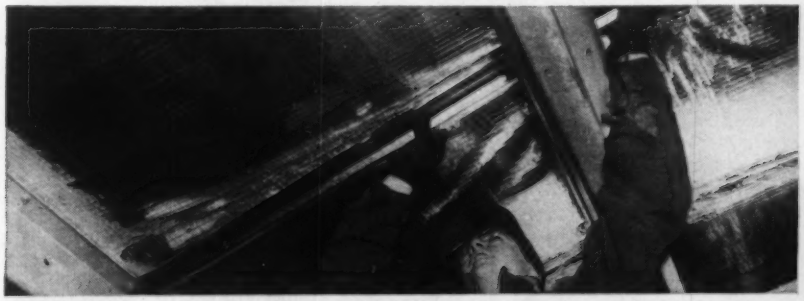
A new method of installing vapor-barrier faced insulation in metal buildings by use of metal tabs is said to provide a positive, mechanical vapor seal and afford significant installation economies.

Under the system, Metltabs are used to seal joints resulting from application of insulation rolls and to assist in supporting the insulation. According to the manufacturer, their use reduces, by about one-half, the time required for installation by conventional methods.

The Metltabs are of galvanized metal cut to purlin lengths, 3 to 3¼ in. wide, and stamped with a fluted center to fit formations of roof sheet.

One of the first applications of this new system was completed recently in Kansas City, Kan. Glass fiber insulation, faced with reinforced aluminum foil, was installed using Metltab. The structure included four bays, each 58x300 ft for a total of approximately 70,000 sq ft of working and storage space.

The steel frame was erected in the normal manner, and the metal building insulation, 1½ in. thick, in 24-in.



METLTABS applied over purlins seal the joints in aluminum foil-faced insulation.

WHEN SLID INTO PLACE, the fluted metal tabs are bolted to the building purlins.

FINAL appearance is pillowlike.

widths and 100-ft lengths was then applied over the purlins and the roof sheet laid in place. Metltabs were applied above the purlins to seal the joints of the insulation facing with the tabs fitted snugly into the formations of the roof sheet. The tabs overlapped the facing on each side of the joint by 1½ in.

The roof sheets were then bolted to the purlins. This method reportedly improves the efficiency of the overall installation because all through metal contacts are eliminated except for the fastening bolts.

The Metltabs can be removed for roof repairs, and replaced without loss of material. MULTIGLAS PRODUCTS CO., 77 PIERCE AVE., HAMBURG, N. Y.

Lima Line Adds ½-yd Truck Or Crawler Mounted Shovel

A new ½-yard shovel, 13 to 15-ton capacity crane, will be known as the Lima Type 24, Jobmaster.

Representing the smallest unit in the company's line, the machine is available with crawler or rubber mountings and is convertible to shovel, crane, dragline or backhoe application. On a truck or wagon mount the crane has a lifting capacity of 15 tons at 10-ft radius while as a crawler crane it has a lifting capacity of 13 tons at 10 ft.

This air-controlled unit employs large diameter brakes and clutches in the hoist, independent boom hoist with engine controlled boom lowering, differntial tractor-type steering and independent combination chain and cable crowd and retract. Optional features include independent propel, auxiliary third drum and power load lowering.

Maximum overall length of the standard crawler truck is 10 ft 2⅛ in. and the overall width is 8 ft; treads are 16 in. wide. The machine is equipped with four conical rollers, two in front and two in the rear with standard crawler truck. A wider and longer crawler truck is available for special work requiring greater ground bearing area. Six conical rollers, four in front and two in the rear, are on the rubber mounted units and are also included on the machines with the longer trucks.

As a shovel the Jobmaster is equipped with a 16-ft 6-in. boom and 13-ft 3-in. dipper handle. Crane booms, pin or bolt-connected, with all-purpose point shaft are available from 30 to 80 ft. A 10-ft jib is also available. CONSTRUCTION EQUIP. DIV., BALDWIN-LIMA-HAMILTON CORP., LIMA, OHIO.

Turbocharged Diesel Is Heavy on Power

A new lightweight, 175-Turbodiesel, designated the JT-6, is a six cylinder, in-line type with 4⅛ in. bore, 5-in. stroke and a displacement of 401 cu in. Installed in a truck, the JT-6 engine weighs only 1,615 lb or 9.2 lb per. The Turbodiesel weighs 800 lb less than other Cummins Diesels of equivalent horsepower, and is comparable in weight to gasoline engines of similar power.

Turbocharging is the key to the high horsepower available from this small engine. The JT-6 utilizes the normally wasted energy of the exhaust gas to create added power. This is accomplished by piping the exhaust through a turbine which is one element of the turbocharger. Expansion directs the exhaust gas against the turbine blades causing the wheel to rotate at high speed. A centrifugal impeller, mounted on the same shaft, but in a separate housing, draws fresh air and blows it into the intake manifold and cylinders under pressure. More weight of fresh air is forced into the cylinders and a greater quantity of fuel can be burned completely, and this creates more power at the flywheel. The JT-6 develops 40% more power than the naturally-aspirated model.

Laboratory tests indicate that there will be less decrease in power, compared to naturally-aspirated and mechanically supercharged engines, resulting from a decrease in air density as altitude increases. Tests have not determined a definite point where power begins to drop, but maximum engine power appears to be the same from sea level to altitudes above 5,000 feet. The reason is that the turbocharger rotates more rapidly as air pressure decreases. The higher blower speed pumps a larger volume, but approximately the same weight of air as at lower altitudes.

(*Continued on page 67*)

Side Boom Designed for Light Crawler

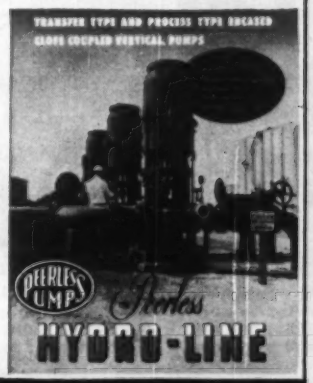
A side boom is now offered for the Oliver OC-3 Crawler. Nicknamed the Little Boomer, the unit is designed to meet requirements for a small crawlerboom for light pipeline handling work.

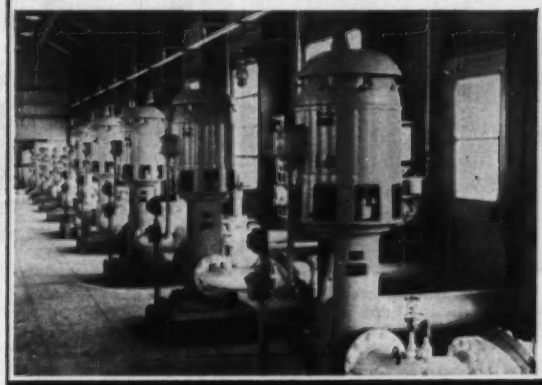
The Little Boomer lifts loads of up to 1,600 lb. It will lay and lower-in up to 6 in. line and will carry single 48-ft lengths up to 12 in. in dia. For greater stability with heavy loads, the unit can be equipped with an automatic hydraulically-operated counter-balance which may be obtained as optional equipment.

Load and boom lines operate off two hydraulically driven winches; the boom itself has only two controls.

Overall dimensions of the side boom and tractor are: height, 84 in., length, 101 in., width, 66 in. and boom length is 10 ft. It can be transported on a medium-sized hauling truck. The Oliver Corp., Dept. 3B, 400 W. Madison St., Chicago.

either way YOU LOOK AT THE PUMPING PROBLEM





VERTICAL

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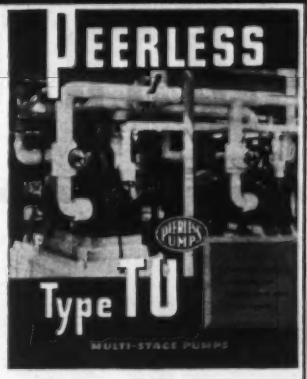

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FAST, LOW-COST DIGGING, ANYWHERE—Suitable for footings, bell holes, laterals, septic tank holes and drainfields. Easy hydraulic operation. Compact for work in crowded places.

LOW-COST EARTHMOVING—Ford Tractor and reversible scoop save money on small yardage jobs. Useful for carrying bricks, sand and concrete blocks. Lifts and lowers hydraulically.

LOWER TRENCHING COSTS—Ford Tractor and trencher digs up to 800 lineal ft. per hour. Widely used for gas and water lines, sewer systems and electrical conduits.

Ford TRACTORS

TRACTOR AND IMPLEMENT DIVISION
FORD MOTOR COMPANY
Birmingham, Michigan

Now, as never before, Ford Tractors are job-fitting tractors.

First, because there are now a number of Ford Tractor models from which to choose. New, more powerful models fit a wider range of power requirements.

Second, because Ford Tractors are adaptable to many different work conditions. They can be equipped to handle a great variety of jobs that are too big for hand labor, yet too small to justify the use of heavier, more expensive equipment.

It's this versatility that contractors and landscapers like *best* about Fords. But there's much more they like, too. Ford Tractor economy, speed, maneuverability and ease of operation mean worthwhile savings in time, money and manpower.

See how you can handle dozens of *your* jobs with a low-cost Ford Tractor. Call your nearby Ford Tractor and Equipment Dealer and ask for a demonstration.

The turbocharger on the JT-6 usually is mounted above the exhaust manifold on the right hand side of the engine. However, mountings for other locations at the rear and side of the engine are available for meeting specific application requirements. Air is piped across the top of the engine to the intake manifold.

A 12-volt electric system is used on the JT-6. This makes an additional weight saving in the chassis by reducing the number of batteries required. Starting is by means of a key-switch on the dash, which actuates the electric starting motor and at the same time opens the shut-down valve on the fuel system.

Release of this new engine follows 15,000,000 miles of field test and preproduction operations of JT-6 Turbodiesels. Research and design work was started in 1951 and included the development of the Cummins Diesel race car which set new qualifying records for the Indianapolis 500 Mile Race in 1952. The turbocharged engine in this car had the same basic design and the same displacement as the JT-6. CUMMINS ENGINE CO., COLUMBUS, IND.

Engine-Driven Welder Rated for 40-250 Amp

A 200-amp engine driven welder, for pipeline welding, construction and maintenance work, is rated for a current range of 40-250 amp and will handle all dc or ac/dc electrodes from $\frac{5}{32}$ in. to $\frac{1}{4}$ in.

Welding performance is said to be characterized by: minimum load drop-off as the welder heats up; "peppy" arc and fast response; ease in arc starting; and a high instantaneous recovery voltage that prevents popouts.

The generator control consists of a tap switch and current rheostat, and there are six electrode taps—one for each different electrode size.

The liquid-cooled Hercules engine operates at 1,750 rpm and has a 17-gal fuel tank which will keep the generator running over 13 hours at full-load rating, 60% duty cycle. A vacuum-operated "slowdown" control—with adjustable time delay—is said to lower operating costs by reducing engine wear and gasoline consumption. The welding generator is direct-driven through a flexible metal-disc coupling.

The generator itself is new. According to the manufacturer, its laminated frame has dove-tail-mounted poles and precision-wound coils, and brush-holders are fixed at the right setting with brushes held by constant-force springs, so that no adjustment is necessary. All of the major components—the flywheel housing, the magnet frame and the end bracket—are held together by four, solid, 1-in. dia "tie rods." The entire assembly can be knocked down by removing four bolts.

All operating parts are protected by a full length canopy made of 16-gauge steel. The welder will fit crosswise in a standard pickup truck and features a skid-type base for portability. Lifting and towing eyes are also provided. GENERAL ELECTRIC CO., WELDING DEPT., SCHENECTADY, N. Y.

Skyhook Lessens Fatigue Of Men Climbing to Heights

A new safety elevator known as the Skyhook is said to allow quicker ascents, fewer stops for rest and eliminate most of the dangers of falling and fatigue for men climbing considerable heights. Used by oil drilling derrickmen, the device has potential usefulness for smokestack and tower erectors, dam builders, etc. where men must climb heights.

The Skyhook operates in this manner. A long cable runs through a sheave attached to the structure at the head of a ladder; at one end of the cable is a double safety belt which fastens around climber's waist and seat; on the other end is a steel counterbalance which glides up and down on a guy wire attached to the structure. As the man climbs upward, the counterweight moves down the guy wire, counterbalancing most of the man's weight. The higher he climbs—the lighter he gets, because the weight of the cable passing through overhead pulley is added to the counterbalance side. DYKES, INC., 1121 ROTHWELL, HOUSTON 2, TEX.

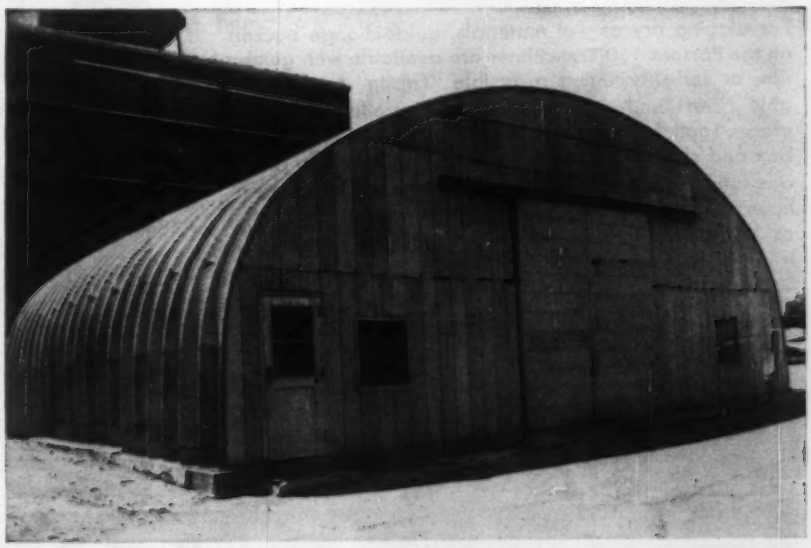
More Floor in Straight-Walled Prefabs

A new straight-wall prefabricated steel building, features trussless construction. According to the manufacturers, the building can be erected in a matter of hours by as few as two workers using simple nut and bolt fasteners. Erection costs are said to average 30¢ psf and purchase costs are $1.25 psf for a building complete with ends, doors, and all necessary hardware. The buildings require no foundation other than a concrete slab, and the new structure is designed to meet all building code requirements. Reportedly it will withstand wind velocities up to 125 mph.

The walls rise vertically to a height of 9 ft before curving to form a semicircular roof, and the interior is completely free from supports.

The "straight-wall" structure is composed of only two components; sections of 2-ft wide galvanized, corrugated steel, which make up the building proper, and steel fasteners. The steel sections need only be fastened together to form a completed, self-supporting straight sidewall, and curved roof.

Sizes of the new building range in width from 30 to 50 ft, and from 12 to 18 ft in height. The length of individual buildings can be tailored to fit particular needs, from a minimum of 2 ft to any maximum required. Additional length is achieved by fastening additional steel sheets to the existing structure. THE WONDER BUILDING CORP. OF AMERICA, 30 N. LASALLE ST., CHICAGO 2, ILL.



Digs up to 25 FEET per minute

Notice the accurate grade you get with this Parsons 150 wheel-type Trenchliner

For pipeline, drainage, irrigation and utility trenching, Parsons 150 Trenchliner brings you big work capacity and precision grading accuracy. It digs from 12 inches to 25 lineal feet of trench per minute. 30 digging feeds assure maximum trench production at every depth, width, and in all soil conditions. Cutting widths range from 16 to 26 inches. Maximum digging depth is 5¾ feet.

Hydraulic wheel-hoist gives smooth, positive control of trench depth. A hydraulic ram on vertical mast raises and lowers the digging wheel — maintains close grade tolerance, an important advantage on any trenching job. A separate hydraulic ram tilts the mast — balances weight of wheel forward on the machine when traveling, loading or unloading on trailer.

For digging dry or wet materials, quick-change buckets on the Parsons 150 Trenchliner are available with gumbo lips, or self-sharpening reversible "Tap-In" teeth. Shiftable, reversible belt conveyor gives controlled discharge, places spoil bank on either side of trench. Tile-laying box and chute (optional) save time and labor on drainage jobs. To suit varying job conditions, this 150 Trenchliner is also available with 16-inch, lug-type crawlers, or 12-inch crawlers with street shoes. Your Parsons distributor has more information that will interest you. See him soon, or write for bulletin.

. . . . *Send to:* **PARSONS CO.,** Newton, Iowa . . . .

for bulletin on 150 wheel-type Trenchliner

NAME_____

COMPANY_____

STREET_____

CITY, STATE_____

(Koehring Subsidiary) **PARSONS TRENCHLINERS®**

5 OTHER SIZES Parsons Trenchlifters include wheel and ladder types, crawler-mounted, and utility-size rubber-tired Trenchmobile.®

Bituminous mixer loads trucks, does stockpiling

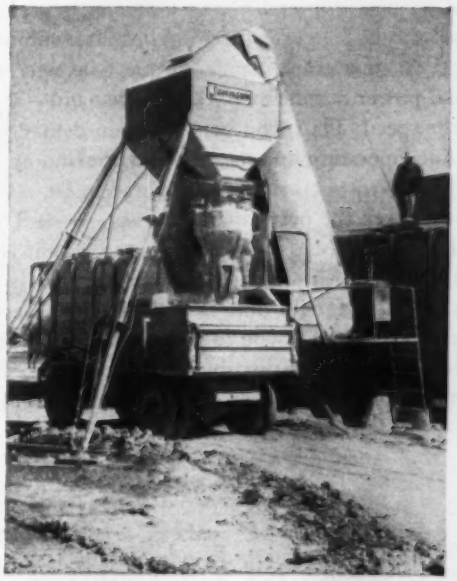
Kwik-Mix bituminous mixers fit any production problem. Tower loader attachment gives discharge height up to 8¾ ft. Or, with skip extension track, mixer can be mounted on skids on elevated platform. Pugmill mixing action, accurate heat control, and even bitumen distribution assure high quality mix. 2 sizes: 10 and 14 cu. ft. Also check Kwik-Mix concrete, plaster-mortar mixers, and Moto-Bugs® with hopper, platform, and fork lift.

KWIK-MIX • Port Washington, Wis.
(Koehring Subsidiary)

Portable batch plant or cement transfer plant

Easily moved and erected by standard dump truck, Johnson Elevating Charger sets up anywhere. As a batch plant, it has a 1000-lb. cement weigh batcher, hung under a 33-bbl. overhead storage hopper. Or, to charge dual-batch trucks, two 1000-lb. batchers can be used. It's easily changed to cement transfer plant by removing batchers, cone, and bolting a 50-bbl. extension section to the upper hopper. See your Johnson distributor.

C. S. JOHNSON • Champaign, Ill.
(Koehring Subsidiary)



Koehring ½-yd. hoe digs 17¾-feet deep

With long reach, Koehring ½-yard 205 hoe puts dirt far beyond edge of cut, or gives 8¾-foot clearance height to load trucks. Close-coupled dipper pulls up tight to the gooseneck boom, avoids spillage. Powerful cable crowd, fast line and swing speeds maintain big-yardage output. This heavy-duty 205 converts to ½-yard shovel, ½ to ¾-yard dragline or clamshell, 10-ton crane. On truck mounting the 205 has 15-ton lift capacity.

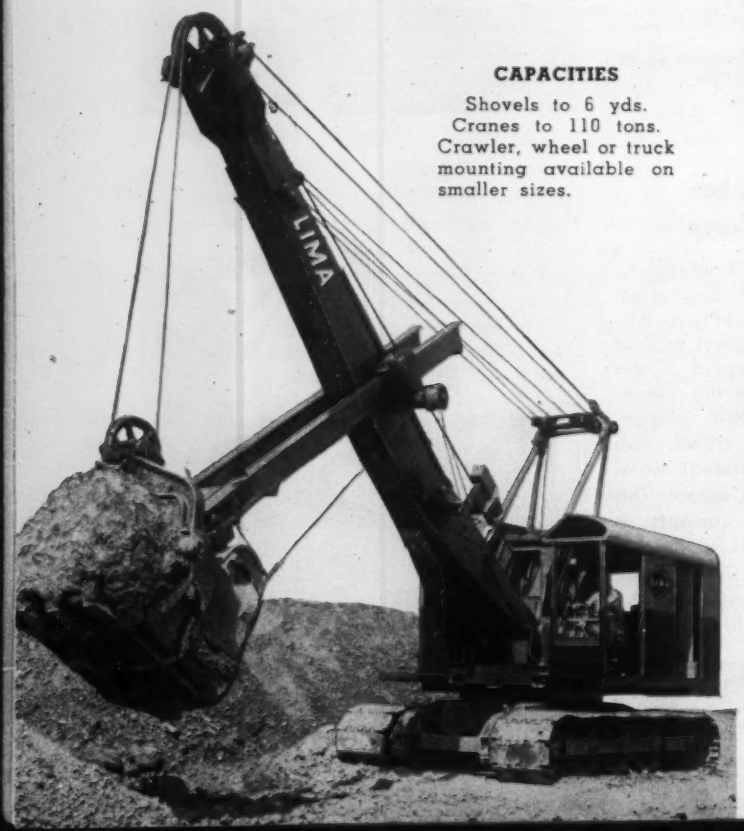
KOEHRING Company
Milwaukee 16, Wis.

T61

LIMA'S new Electric Power Unit eliminates stalls, won't burn out

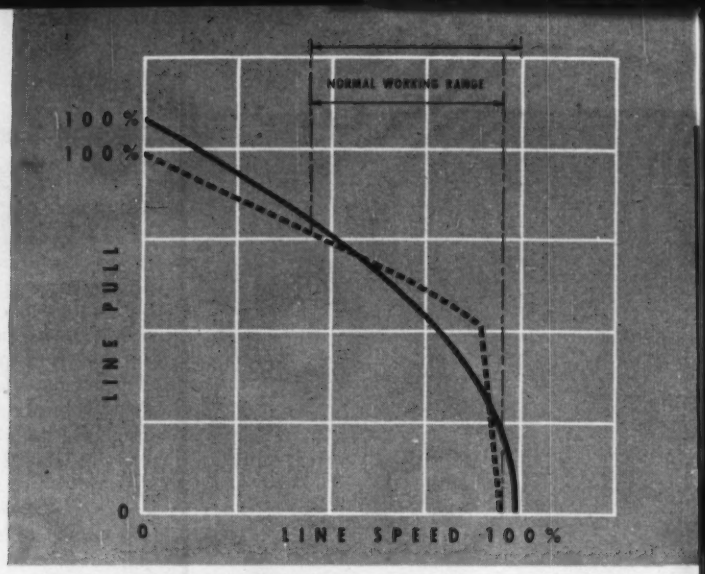
LIMA's new optional power unit matches, *electrically*, diesel-torque converter performance. It combines an AC motor with a single stage torque converter to adapt actual power output to work load demand—at constant motor speed. Thus, you get power on demand through a wide operating range . . . and the motor will not stall or burn out in heavy load operation.

Just check the performance curves —— They make it clear that LIMA's new electric power unit is the perfect answer when your job calls for electrically powered machines. The new unit is available on every LIMA machine. It will pay you to get the full story today from your nearby LIMA distributor . . . or write: Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.



CAPACITIES

Shovels to 6 yds.
Cranes to 110 tons.
Crawler, wheel or truck mounting available on smaller sizes.

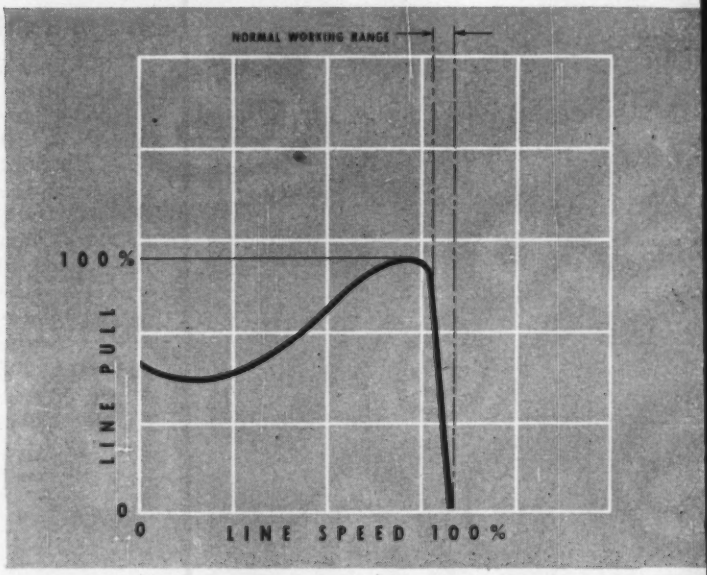


Power Performance of LIMA'S New Optional Unit:

A.C. Electric motor with torque converter drive [Diesel-torque converter curve (dotted line) shown for comparison]

With this drive, even under extreme loading, the motor will pull down in speed only a very small amount. It can never be stalled.

The line pull will constantly increase through a long pull down speed range, depending upon the load applied.



Power Performance: A.C. Electric motor with direct drive

The motor speed and torque varies as shown for line speed and pull.

With a pull down in speed of only 3% to 5%, torque rises too fast. The motor will stall quickly after peak torque is reached. Workable speed range is small, stalls are frequent.

BALDWIN BLH LIMA-HAMILTON

LIMA SHOVELS · CRANES DRAGLINES · PULLSHOVELS

BALDWIN-LIMA-HAMILTON

Construction Equipment Division · LIMA · OHIO · U. S. A.

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MEN AND JOBS

N. E. Lant

N. E. Lant, Bridge Engineer, Retires From Louisiana Post

Norman E. Lant, urban engineer of the Louisiana Department of Highways, retired July 15, after 32 years of service.

Although he has held several top engineering posts in the department, Lant is best known for his work as bridge engineer. During the last three decades, he has designed or supervised the design and construction of nearly all the major highway bridges in Louisiana, many of which have received national recognition for the engineering skill involved. Among these, for example, is the Mississippi River Bridge at Baton Rouge, where the main spans were erected by cantilever erection without falsework, and the Morgan City Bridge, which boasted the deepest pier in the world at the time of its construction in 1933.

A civil engineering graduate of Purdue University, Lant joined the Louisiana Department of Highways in 1922 as bridge engineer. After organizing the first bridge section of the department, he had charge of the state's bridge building program until his appointment as chief engineer in 1946. Six years later, he was named urban engineer to initiate plans and supervise municipal projects for traffic improvements in the state's larger cities.

As urban engineer, Lant has been a leading planner of some of the largest urban projects ever undertaken in Louisiana. Among these are the Shreveport, New Orleans, and Pontchartrain Expressways.

Before coming to Louisiana, Lant served as senior bridge engineer of the Indiana Highway Department and as bridge engineer in Fort Worth, Texas, and Little Rock, Ark., for the U. S. Bureau of Public Roads. He was in France and Germany with the Army Engineers during World War I, and later did postgraduate work in geology and general engineering at Trinity College, Dublin, Ireland.

American Bridge Division Fills Two District Posts

U. S. Steel's American Bridge Division has appointed G. P. Willoughby as district engineer and Clinton W. Wixom as assistant district engineer in New York City.

Willoughby, who succeeds R. R. Graham, retiring after 43 years of service, has been plant engineer at the Birmingham plant of American Bridge since 1952. He is a civil engineering graduate of Alabama Polytechnic Institute and joined the company as a designer in 1936. Following his World War II service with the U. S. Navy Seabees, he was appointed a construction engineer in 1946.

The new assistant district engineer has been engineer in charge of designing and quantity estimating in the New York office since 1948. Wixom began his career with the company as a draftsman in 1922, shortly after he obtained his civil engineering degree from Cornell University, and has been associated with the engineering and construction of a number of major American Bridge projects both at home and abroad.

Pennsylvania Turnpike Gets Another Chairman

The Pennsylvania Turnpike Commission has unanimously elected G. Franklin McSorley of Pittsburgh as chairman. He succeeds T. J. Evans, who resigned as of July 1 after serving on the commission since 1939, and as its chairman since 1941.

McSorley's election is understood to have been made on an interim basis, pending senate action on Governor Leader's nomination of Congressman William J. Green of Philadelphia to the post.

Appointed a member of the commission in February 1955, McSorley has been in the real estate and construction business in Pittsburgh for over 30 years.

Lt. Col. Giesen

Lt. Col. Giesen Assigned To Area Office in Iceland

Lt. Col. Robert J. Giesen has been assigned to the Corps of Engineers' area office in Keflavik, Iceland as chief of construction and engineering. His new job will include supervision of projects under construction by the Eastern Ocean District for the Army, Navy and Air Force in Iceland.

Since his recall to active duty in 1953, Col. Giesen's assignments have included duty as a resident engineer attached to the Baltimore District. He was in charge of construction of complex laboratory and test facilities at Aberdeen Proving Grounds and later supervised site preparation and construction of a $40-million troop housing project at Fort Meade.

Col. Giesen was commissioned in the Army in 1942, following completion of the ROTC program at the University of Wisconsin, and served overseas with the 84th Infantry Division. After the war, he returned to civilian life with a reserve commission and, until his recall, was associated with Kasper Construction Company in Manitowoc, Wisc., as construction engineer.

Highway Interests Sponsor Engineering Scholarships

Scholarships established by the Kentucky State Highway Department and members of the highway industry have been awarded to eighteen

(Continued on page 75)

How to Sewage System

By-products can help pay part of sewage system expansion costs. Here's how...

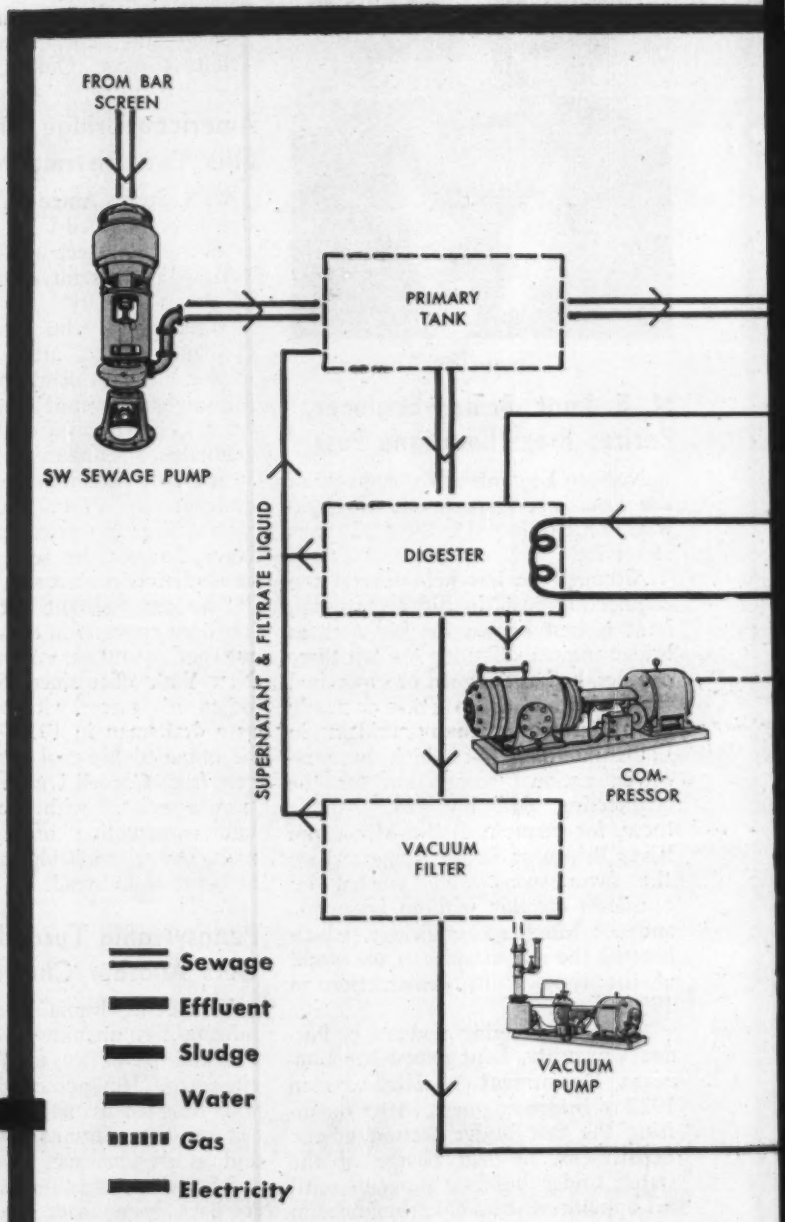
The flow sheet at the right shows two modern treatment methods that use by-products to help meet expansion costs.

- Some cities, through the sale of fertilizer, are recovering a large percentage of the cost of operation.
- Other cities are using digester gas to supply most of the sewage power and light needs.
- Many industrial sewage plants are paying their way with similar improvements.
- The increasing use of home garbage disposal units is aiding many municipal plants to increase their by-product value.

Get Help on Your Problem

Allis-Chalmers, builders of the world's widest range of public works equipment, can help you analyze your problem and select the proper equipment for your particular needs. For complete information on any of the Allis-Chalmers items shown here . . . call your nearby Allis-Chalmers District Office or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-4634

Low-Head is an Allis-Chalmers trademark.

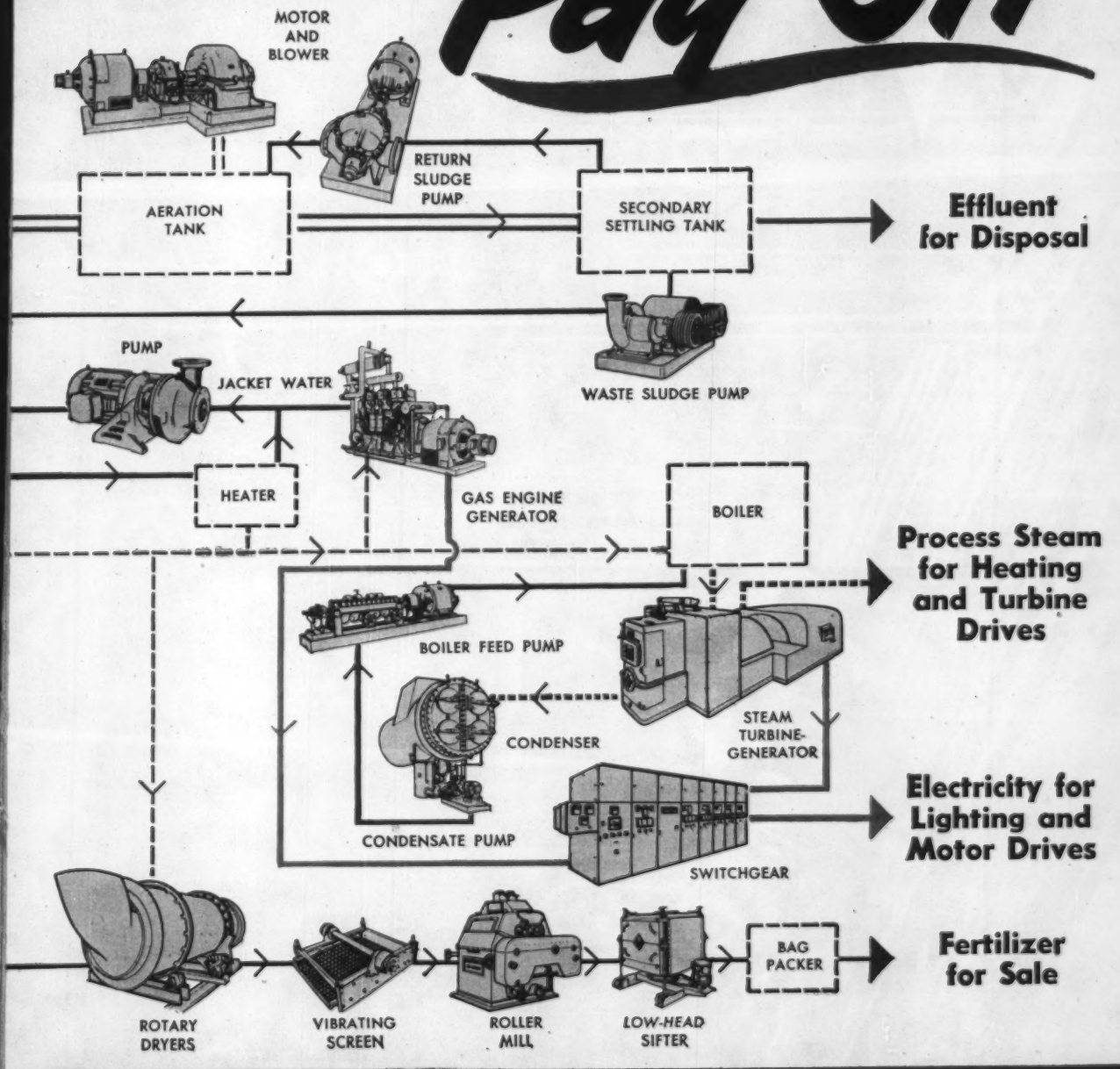


All equipment shown in solid line built by Allis-Chalmers.

A-C ALLIS-CHALMERS

ALLIS-

make Expansion *Pay Off*



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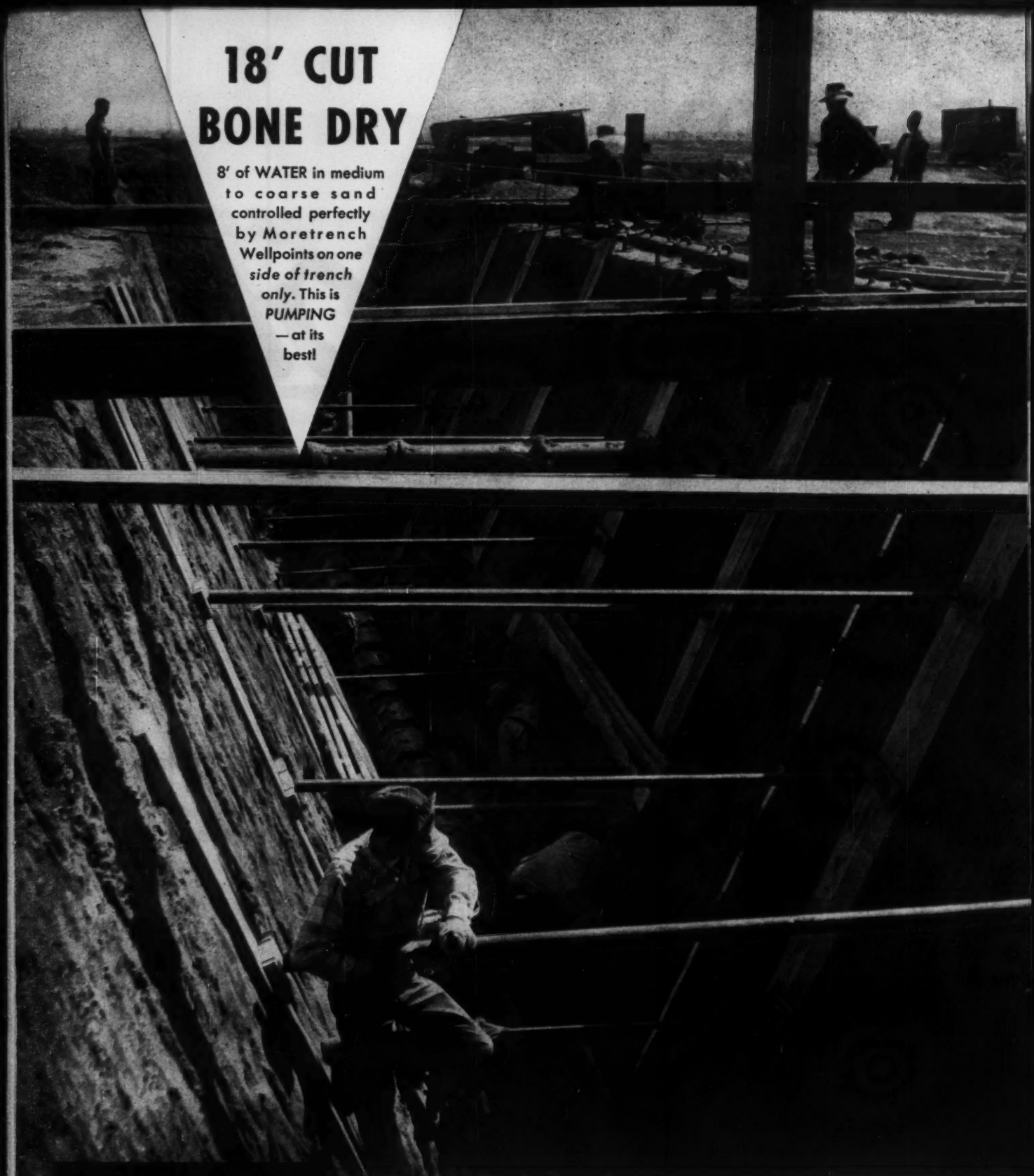

18' CUT
BONE DRY
8' of WATER in medium to coarse sand controlled perfectly by Moretrench Wellpoints on one side of trench only. This is PUMPING — at its best!

Submain #3, Sanitary Sewer #22, Wichita, Kansas. W. B. Carter Construction Co., Inc., Wichita, Contractor

MORETRENCH CORPORATION

90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

high school graduates who will enter the University of Kentucky College of Engineering next fall.

Fourteen of the scholarships are supported by the highway department. Students who have received them will work for the department during the summer months and for one year after graduation.

Industry members supporting the other four awards are the Kentucky Highway Contractors Association, Plant Mix Asphalt Industry of Kentucky, Ralph E. Mills Foundation, and R. R. Dawson Bridge Company.

Fellowships Are Awarded For Traffic Study at Yale

Engineers from five foreign countries will be among those studying next year at Yale University's Bureau of Highway Traffic under fellowships awarded for the one-year course.

Those from abroad who have received fellowships are the deputy city engineer of Melbourne, Australia; a member of the staff of the University of Technology in Vienna, Austria; a civil engineer with the Hague Public Works Department, Netherlands; a civil engineer from Helsinki, Finland; and a consulting engineer from Lausanne, Switzerland.

Balance of the 25 fellowships have been awarded to engineers and students in the United States. These recipients represent 15 different states and, although three of them are associated with engineering firms, most are members of state and municipal highway and traffic agencies.

With the exception of one fellowship for $1,400, each grant is worth $2,000 and is intended to cover all expenses incurred during the year.

Former Tunnel Engineer On Duty in Washington

Lt. Col. Robert J. Jackson, Jr., has been named post engineer at Walter Reed Army Medical Center, after serving two years as an engineer advisor to the Thai Army with the Joint U. S. Military Advisory Group.

Before entering the service in 1940, Col. Jackson was a tunnel construction engineer with the New York Port Authority on the Lincoln Tunnel, and with the New York City Tunnel Authority on the Queens-Midtown Tunnel. He is a civil engineering graduate of the University of Alabama.

Col. Jackson has served in Europe and Iceland and as engineer advisor to the Air Mission to Venezuela in the course of his military career.

NSPE Recommends Formation Engineering Advisory Board

The National Society of Professional Engineers has recommended formation of an Engineering and Scientific Personnel Advisory Board, which would be under civilian control and housed and administered in the Office of Defense Mobilization.

As envisaged by NSPE, such a board would be composed of "eminent persons in the engineering and scientific professions, including those experienced in industry, government, education and armed forces." Its function would be to recommend "basic national policies with respect to the proper balance between military, industrial and research needs of the nation."

The recommendation was made by NSPE's executive director, Paul H. Robbins, in testimony before the Senate Committee on Armed Services.

Robbins noted that the military services "are not the best agencies to weigh the often complicated and complex considerations of critical skills in relation to national defense production and research." He suggested that formation of such a board, whose recommendations could be made binding upon Selective Service and the military departments, would aid in achieving a proper balance between "the two kinds of related national defense activities—armed forces and development and production facilities."

Ohio River Commission Elects a New Chairman

Earl Devendorf, director of the Bureau of Environmental Sanitation, New York State Health Department, has been named chairman of the Ohio River Valley Water Sanitation Commission. He succeeds W. W. Jennings, of Alloy, W. Va.

Charged with control and abatement of stream pollution in the Ohio River Basin, the commission was created with Congressional approval under an interstate compact—effective June 30, 1948 and then the fourth of its kind in the nation—between Illinois, Indiana, Kentucky, New York, Ohio, Pennsylvania, Virginia and West Virginia. It's membership consists of three representatives from each state and three from the federal government, who serve without compensation.

According to Edward J. Cleary, ORVWCS executive director and chief engineer, 46% of the 9,600,000 persons in the valley now are served with sewage treatment facilities and 12% more have sewage treatment plants under construction. Of the 1,426 industries discharging into streams of the basin, Cleary said, 70% have some form of control and another 3% have facilities under construction.

The new vice chairman of the commission is Kenneth M. Lloyd, secretary of the Mahoning Valley Industrial Council, Youngstown, Ohio. He and Devendorf were each elected for terms of one year.

Two Engineers Return From Mission in India

After spending a year in India under a U. S. Foreign Operations Administration program, James R. Villemonte, professor of civil engineering, and Vincent C. Rideout, professor of electrical engineering, have returned to the University of Wisconsin College of Engineering.

They were among nine American engineers selected last year from various colleges and universities to participate in the inter-university cooperative relationship program between American and Indian technical schools. Designed to strengthen and expand technical education in Indian schools, the program is administered by the College of Engineering at the University of Wisconsin.

In addition to teaching, both engineers worked on engineering and engineering-education problems during their year's stay in India. Villemonte, for instance, assisted in the design of a new hydraulics laboratory at Bengal Engineering College and, as consultant with the West Bengal government, worked on some of the problems that arose at several of the large new hydraulic installations in India.

Asphalt Institute Appoints Evans as District Engineer

The Asphalt Institute has named Don G. Evans, former California highway engineer, as district engineer for southern California and Arizona. He will make his headquarters in Los Angeles.

Evans has spent more than 45 years in highway engineering with federal and state agencies, including the Corps of Engineers.

One of his early associations was with the United States Bureau of Public Roads, with which he worked for seven years locating and developing forest and park roads in Arizona and New Mexico, including the Grand Canyon highway system. He joined the California Division of

All along the Garden State Parkway...

McKiernan-Terry Pile Hammers helped to speed up construction

On river bridge piers and land approaches, highway overpasses, and sand drain soil stabilization along the length of New Jersey's new Garden State Parkway, McKiernan-Terry Pile Hammers helped contractors carry out their foundation work in quickest time and at least cost.

The wide use of these powerful and dependable hammers on this important project is typical of their preference among contractors all over the country on all types of foundation work. Your own foundation jobs, too, will be speeded up by McKiernan-Terry Single-Acting Pile Hammers, Double-Acting Pile Hammers and Extractors.

Write for descriptive bulletins.

McKIERNAN TERRY

MX388

McKIERNAN-TERRY CORPORATION

80 Richards Avenue, Dover, New Jersey

Manufacturing Engineers • Plants: Harrison, N. J., Dover, N. J.

Also builders of Coal and Ore Unloaders and Bridges, Grab Buckets, and Special Machinery

Highways in 1927 and served with it in various capacities until his retirement early this year.

Evans received his civil engineering degree from Rose Polytechnic Institute, Terre Haute, Ind., in 1911. His four years of service with the Corps of Engineers included duty as highway engineer and later as chief of military construction in eight western states.

Highway Training Program Is Under Way in New Jersey

This year the New Jersey State Highway Department initiated a recruitment program similar to that in common use by industrial firms. It combines recruiting on college campuses with an intensive 26-week training course within the department.

The first group of 11 potential highway engineers commenced the new course last week. Each of them will receive general training in bridge and road design and construction, traffic engineering, electrical operations, soil analysis and maintenance. Those who have demonstrated satisfactory ability, aptitude and performance will be given a permanent status in the department at the end of the six-months probationary training period.

Highway Commissioner Dwight Palmer believes this is the first program of its kind to be conducted by a state department. He has expressed the hope that it will contribute materially to the department's ability to meet the growing public demand for more and better highways.

Asphalt Institute Promotes Study of Civil Engineering

In an effort to encourage the study of civil engineering, the Asphalt Institute has established a Bernard E. Gray Fellowship at the University of Maryland. Named for the immediate past president of the Institute, the fellowship is expected to be the first of several to be established at qualified engineering schools throughout the nation.

In announcing the grant, Institute president J. E. Buchanan said: "It's a disturbing fact that, while our engineering colleges are increasing in enrollment, the number of students planning careers in civil engineering is falling behind. We can already forsee the day when the shortage of new civil engineers will be crucial."

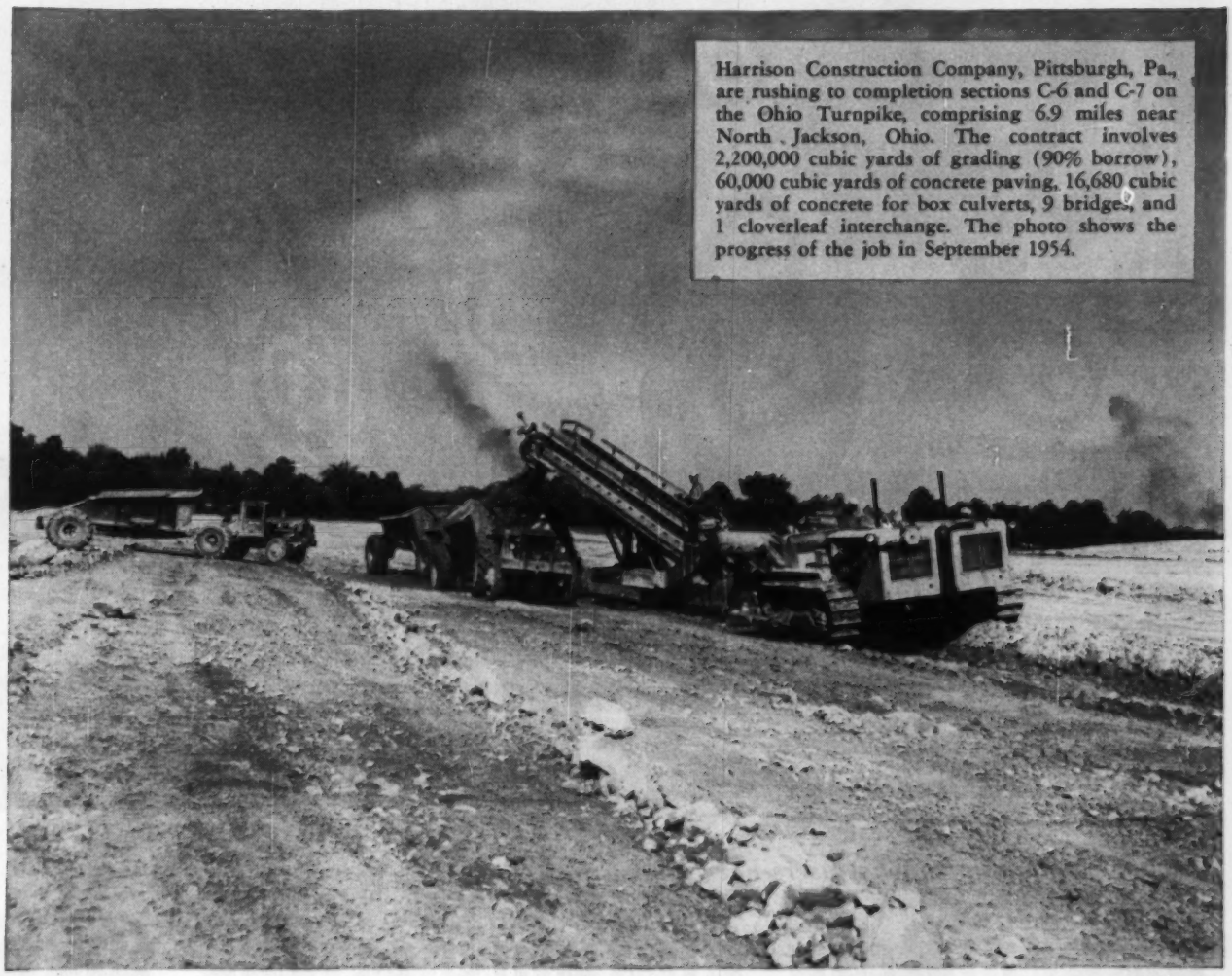
Buchanan attributed the decline in interest in civil engineering to the lure of more glamorous engineering

(Continued on page 80)

GULF PRODUCTS *and* FINE SERVICE

keep equipment rolling

on the Ohio Turnpike Project



Harrison Construction Company, Pittsburgh, Pa., are rushing to completion sections C-6 and C-7 on the Ohio Turnpike, comprising 6.9 miles near North Jackson, Ohio. The contract involves 2,200,000 cubic yards of grading (90% borrow), 60,000 cubic yards of concrete paving, 16,680 cubic yards of concrete for box culverts, 9 bridges, and 1 cloverleaf interchange. The photo shows the progress of the job in September 1954.

THE Ohio Turnpike is another big and important project where a large percentage of the participating contractors rely on Gulf to keep their equipment on the job and operating smoothly.

Contractors like Harrison Construction Company, for example, appreciate the clean-burning, high performance properties of Gulf gasoline and Diesel fuels—also Gulf's prompt delivery service.

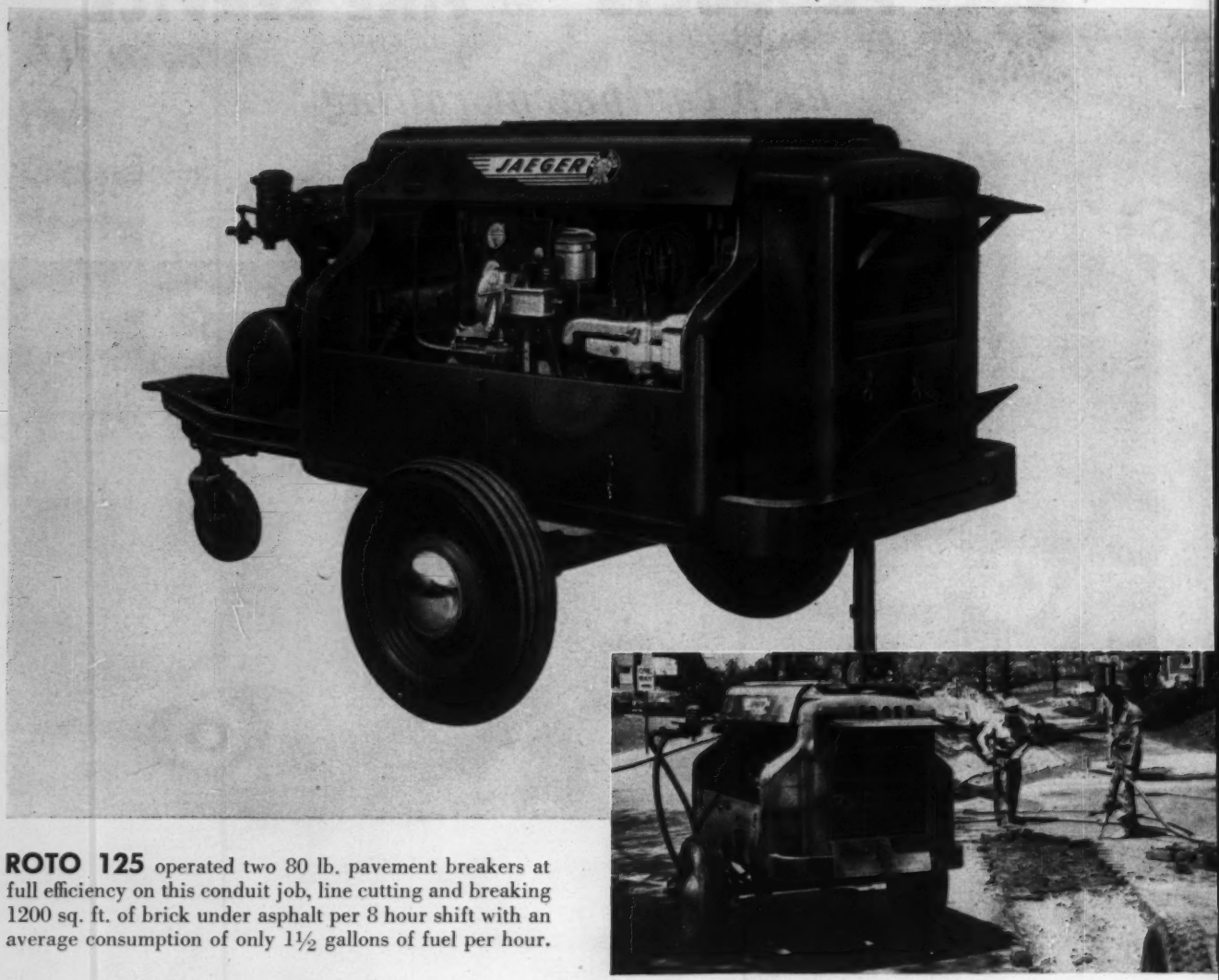
Let us discuss with you how Gulf's quality service and fine products can help you on your next job. They are quickly available to you through more than 1400 warehouses located in 31 states from Maine to New Mexico.

GULF OIL CORPORATION
1822 Gulf Building

GULF

GULF REFINING COMPANY
Pittsburgh 30, Pa.

THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS



ROTO 125 operated two 80 lb. pavement breakers at full efficiency on this conduit job, line cutting and breaking 1200 sq. ft. of brick under asphalt per 8 hour shift with an average consumption of only 1½ gallons of fuel per hour.

Now we can announce what users have known for a year

Jaeger Roto air-plus is the first

Instant air delivery, exactly regulated to demand, maintains constant pressure as smooth as steam.

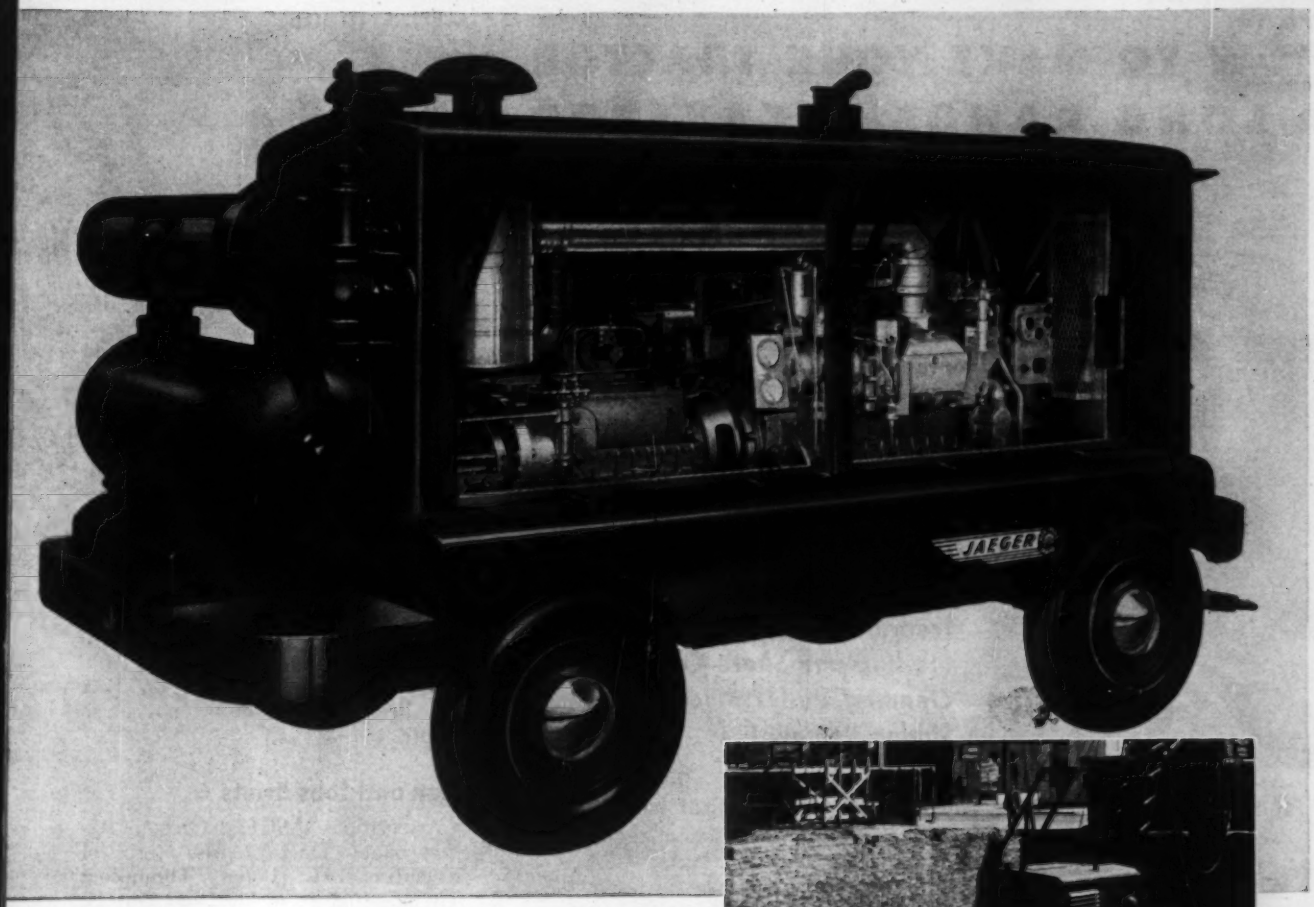
High efficiency results in slower operating speeds, the lowest fuel consumption and longest engine life of any rotary compressor.

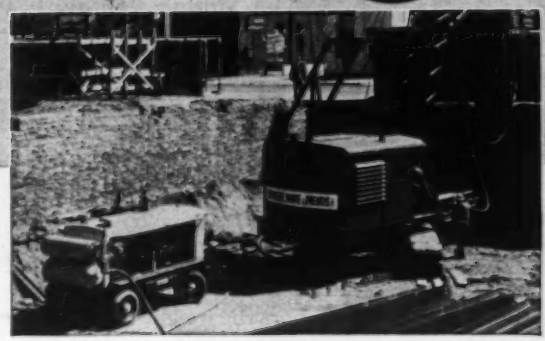
After 5 years development work, Jaeger engineers perfected the first fully efficient 2-stage oil-cooled rotary compressor early in 1954. Since then, Jaeger "Roto" units have logged thousands of hours on all types of application from street work to heavy rock drilling and pile driving.

Performance has consistently excelled even the best of other rotary compressors. On typical quarry work, for example, operating two 4" wagon drills with air-tugger hoists in hard limestone, 10 hours a day, a Jaeger Roto "600" averaged 7 gallons of fuel an hour in 2200 hours of operation. Its engine never ran faster than 1600 rpm. A Roto "125", handling the air demands of two heavy duty paving breakers, shows an equivalently low fuel consumption of approximately 1½ gallons an hour.

Simple, close, continuous control

Control of engine and compressor is so effective that 100 lbs. minimum pressure is constantly maintained over the entire operating range. Speed modulation is smooth and stepless. Instantaneous control positively prevents overrun and resultant racing of the engine. Furthermore, controls are extremely simple, without metering orifices, complex linkage or toggles. When starting, you merely make one half-turn of a regulator crank to set engine fuel control on "Idle." All controls are conveniently grouped on one side of the compressor.





ROTO 600, holding steady 100 lbs. pressure for 160 working hours (as smooth as steam) kept this Vulcan No. 1 hammer hitting 60 full power blows per minute, with air to spare for breaker and clay spade work.

fully efficient rotary compressor

There are many further advantages. Jaeger's copper tube finned multi-pass oil cooler insures cool operation in over 100° weather. Automatic by-pass valve means no "dry starts" in cold weather. Multiple perforated disc oil filters won't corrode, absorb or freeze. Adjustable radiator shutters maintain engine water temperature on sub-zero days. All sizes have accessible 8-hour fuel tanks. Tool boxes on the "125" hold a full set of tools.

Available in 125 and 600 cfm sizes

To meet the principal demands of users who prefer the rotary type compressor, current production of the Jaeger "Roto" is concentrated in the popular 125 and 600 cfm sizes. *For the many air users who still prefer the piston type, Jaeger reciprocating Air-Plus compressors continue to be available in the "new standard" ratings with the exception of the 600 cfm size.*

For complete information see your Jaeger distributor or send for Catalog JCR-5.

THE JAEGER MACHINE COMPANY

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TRUCK MIXERS • PAVING MACHINES

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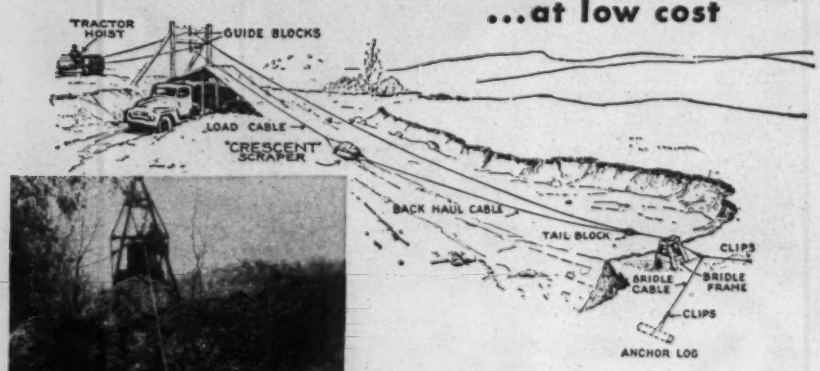

Pond and Culvert Cleaning
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Grading and Shore Construction
Cleaning Under Bridges
Sludge Removal

A Sauerman Drag Scraper offers the most economical method of excavating and hauling material in jobs where lifting is not required.

When used with your tractor-mounted two-drum winch, the Crescent Scraper can dig several hundred feet away and deliver its load to a stockpile, hopper, crusher or truck.

Tractor-powered Sauerman Scraper Machines work in places that do not allow the head room other machines require, as well as over surfaces that will not support the weight of other type equipment.

See table for specifications.

INFORMATION ON DRAGLINE SCRAPER MACHINES

Bucket Size, Cu. Yd.	Recommended Horsepower of Tractor	Recommended Max. Lgth. of Span in Ft.	Recommended Line Speeds		Hourly Capacity in Cu. Yds. Working at Speeds Indicated on Average Hauls of—		
			Inhaul F.P.M.	Outhaul F.P.M.	100 Ft.	150 Ft.	200 Ft.
¾	40-45	300	250	500	68	45	33
1	65-70	300	200	600	80	52	40
1½	90	400	250	500	135	90	68
2	125	400	250	500	180	120	90
2½	125	400	250	500	225	150	112
3	150	400	250	500	270	180	135

Have Sauerman recommend the Scraper-Tractor system best suited to your operation. Write for Bulletin No. 160, Long Arms for Your Tractor and give make and model number of your tractor.

SAUERMAN BROS. INC. 632 S. 28th Ave. Bellwood, Ill.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

careers and to the competitive bidding for engineering talent, which has left the civil engineer in the lower career pay bracket.

Seems to Run in the Family

Robert M. Morris, an associate in the Pittsburgh, Pa., engineering firm of Swindell Dressler Corporation, has been appointed to the Pennsylvania Tunnel Commission, which will build and operate the multi-million-dollar Fort Pitt toll tunnel.

As a member of the commission, he will be associated with a project located only a few hundred feet downstream on the Monongahela River from where his grandfather, James W. Patterson, bored the first tunnel through Mt. Washington, a tube which carried Jay Gould's Wabash Railroad into Pittsburgh.

The 3,800-ft. Fort Pitt tunnel will be a part of the Penn-Lincoln Parkway system, hooking on to the Fort Pitt Bridge across the Monongahela River.

Men and Jobs Briefs . . .

• **Associations**—ASCE's Oregon section names **D. L. Lewis**, Corps of Engineers; **H. Loren Thompson**, Thompson & Associates; and **Guy H. Taylor**, Moffat, Nichol & Taylor, to handle advance planning for ASCE's 1958 national convention in Portland, Ore. . . . **Arnold F. Mitchell**, former assistant New York State Industrial Commissioner, is appointed managing director of the newly-formed statewide organization of general contractors in New York (ENR, July 7, p. 24) . . . **Grant A. Pettit**, waste treatment engineer with Armco Corp., Middletown, O., is elected president of the Ohio Sewage and Industrial Wastes Treatment Conference.

• **Careers**—After spending eight years with the Los Angeles County Air Pollution Control District, **Gordon P. Larson** retires as director of research and engineering . . . **Franklin J. Moyer** is appointed supervisor of roadside development for the Pennsylvania State Highway Department, succeeding **Wesley L. Hottenstein** . . . **Robert H. Peck** is named city manager of Sanford, N. C., after holding a similar post in Moorsville, N. C., for the past five years.

William E. Willey, member of the Arizona highway engineering staff since 1932, becomes the new state engineer, succeeding **George E. Lang** who retired after 44 years of state

HIGH CAPACITY, YET PORTABLE—The Titan Blaster is housed in a rugged aluminum case and is waterproof.

NEW HERCULES TITAN BLASTER

For Maximum Safety, Economy

THREE-IN-ONE—The V.A.O. meter, available through Hercules, is a combination voltmeter, ammeter, and blasting galvanometer that has proved its value in field use as an important blasting aid.

The Hercules Titan® Blaster is a high-capacity, condenser discharge type of blaster that combines maximum safety with minimum maintenance expense.

The Titan Blaster has no moving parts. It is operated by depressing two push-button switches—one to charge and one to fire. This new Hercules blaster develops sufficient electrical energy to fire as many as 1,200 detonators. Yet, there is no high voltage associated with the Titan Blaster except during charge and firing. The source of energy is a relatively inexpensive 6 volt, dry cell ignition-type battery.

For full technical details on the Titan Blaster, write:

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Explosives Department, 940 King St., Wilmington 99, Del.

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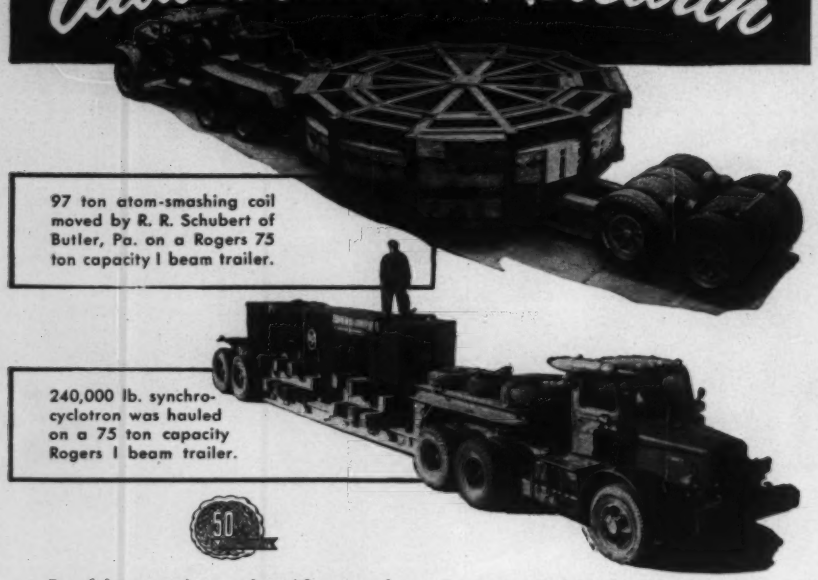
Aids to Atomic Research



97 ton atom-smashing coil moved by R. R. Schubert of Butler, Pa. on a Rogers 75 ton capacity I beam trailer.

240,000 lb. synchro-cyclotron was hauled on a 75 ton capacity Rogers I beam trailer.

50

In this amazing scientific age there is a general inclination to accept progress with little thought as to the vast knowledge, skill and facilities required to attain it.

Take, for example, atomic development. Of basic importance is the scientific research. Next required are the engineering and mechanical operations to translate this knowledge into electrical and mechanical components. Then comes the *problem of moving these heavy, valuable parts to the laboratory.*

Consider the case of the Carnegie Institute's Nuclear Research Laboratory at Saxonburg, Pennsylvania. After a water trip of 3600 miles two expert riggers were engaged to move the atom-smashing coil and synchro-cyclotron from the waterfront to laboratory. Both of them entrusted their precious loads to Rogers Trailers.

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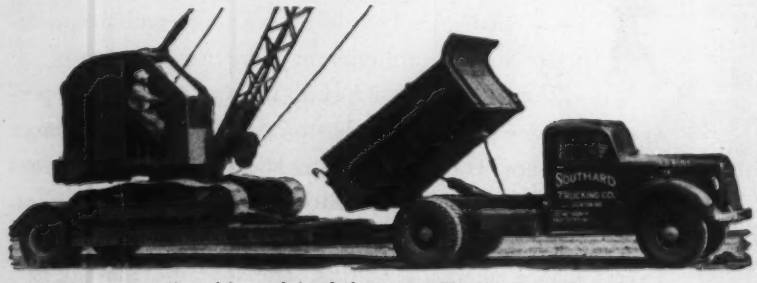


Attaching of loaded Rogers Tagalong trailer

MEN AND JOBS

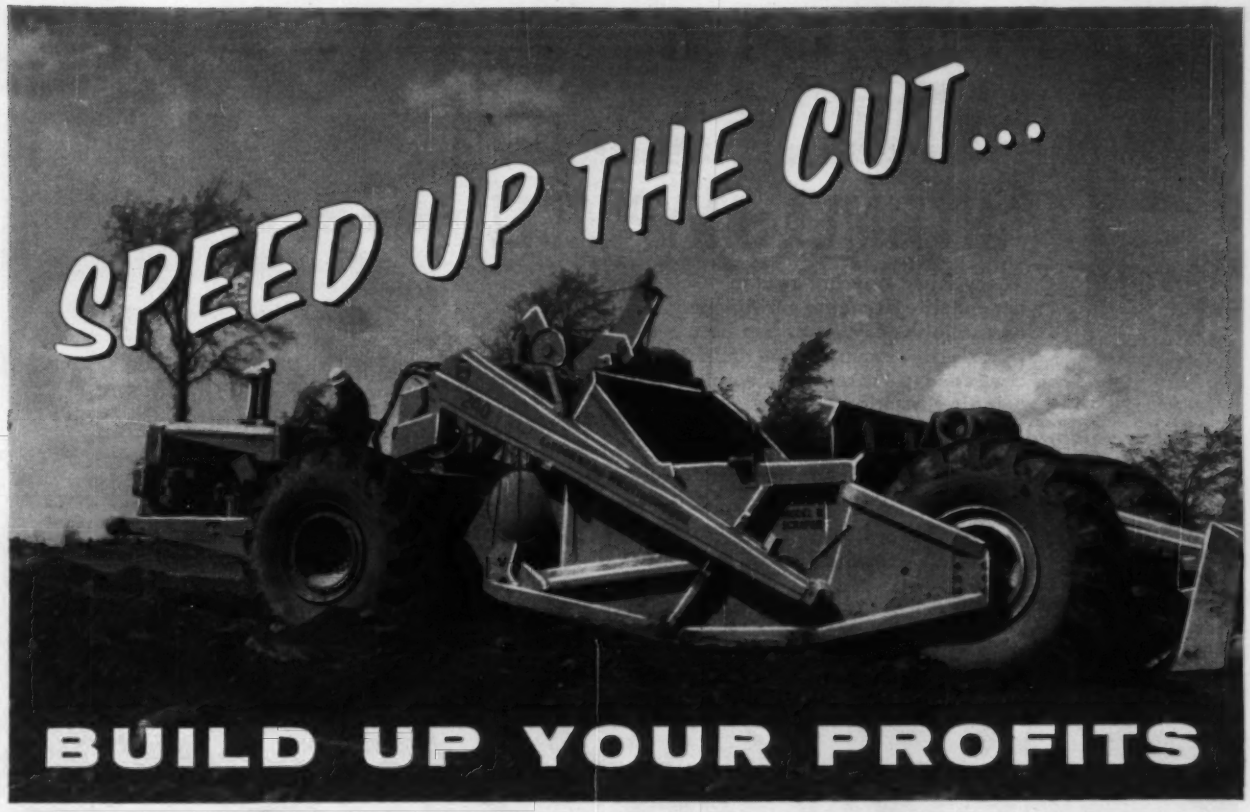
service . . . **George A. Carter** is named to his first full term as director of the Baltimore, Md., Department of Public Works, and **Albert P. Backhaus** is appointed his deputy . . . **James J. Malone,** a former city engineer and water superintendent of Lancaster, Pa., joins the Pennsylvania Department of Highways as assistant chief maintenance engineer—he's been engaged in heavy construction work since 1935.

• **Business**—Sanderson & Porter, New York engineers, admit **John F. Garde, Jr.,** as a partner in the firm . . . James **C. Roberts,** who joined American Bridge Division of U. S. Steel as a draftsman in 1941, is named contracting manager of the company's San Francisco district office . . . **Eugene McGovern,** former vice president of Cauldwell-Wingate Company, is elected vice president of Halloran-Narr, Inc., Long Island City, N. Y., specialists in concrete construction, and treasurer of the Conduit & Foundation Corporation, Philadelphia heavy and highway construction firm which has opened its New York office in Long Island City.

Walter C. Rueckel, vice president of Henry J. Kaiser Co., Oakland, Calif., for the last four years, is named vice president and general manager, Engineering and Construction Division, Koppers Company, Inc., Pittsburgh, and will direct all Koppers engineering and construction activities here and abroad . . . The M. W. Kellog Company, New York engineers and constructors, appoints **John O. Wagner,** rocket and guided missile expert, as Washington representative for its Defense Products Division.

• **Education**—John C. Seeger, sanitary engineer with American Well Works, Aurora, Ill., will join the civil engineering department of Illinois Institute of Technology in September as an assistant professor. He has taught mechanical and civil engineering at Louisiana Polytechnic Institute and has served as resident officer in charge of construction and public works with the U. S. Navy.

• **Honors**—The South Carolina American Legion Plaque for distinguished service to South Carolina is awarded to **Charles E. Daniel,** of Daniel Construction Co., Greenville . . . **Thornton C. Murphy,** partner in Murphy Brothers Construction Co., Spokane, Wash., receives the City of Spokane's Distinguished Service Award.



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You speed up your job and operate at lower cost on Firestone Nylon truck tires because the treads give maximum traction and they are extra tough to resist cutting. The sidewalls are double thick to give added protection against cuts and snags. The new Firestone Safety-Tensioned Gum-Dipped* nylon cord body insures longer tire life and more retreads. It gives the greatest protection against impact breaks . . . flex breaks . . . heat failures . . . and water damage.

Let your Firestone Dealer or Store show you how Firestone Nylon Off-The-Highway tires will cut your downtime and increase your profits.

*T.M. Reg. U.S. Pat. Off.

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There are many other good, money saving reasons why you should put a Homelite pump on your job. Ask your Homelite dealer for a free demonstration or write us for information.
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PROJECT: Nyack-Tarrytown Bridge

CONTRACTOR: Construction Aggregates Corp.

Photos courtesy Clark Equipment Co.

FULL TRASH BOX is picked up and empty one is left at the job site to be filled. The exchange operation normally takes about 5 min which cuts contractor's costs.

MANEUVERABILITY of the straddle carriers permits them to travel metropolitan streets with little delay. Here, a filled box is on the way to Clementina, Ltd.

Housekeeping Service for Contractors Uses "Waste-Basket" Plan for Job

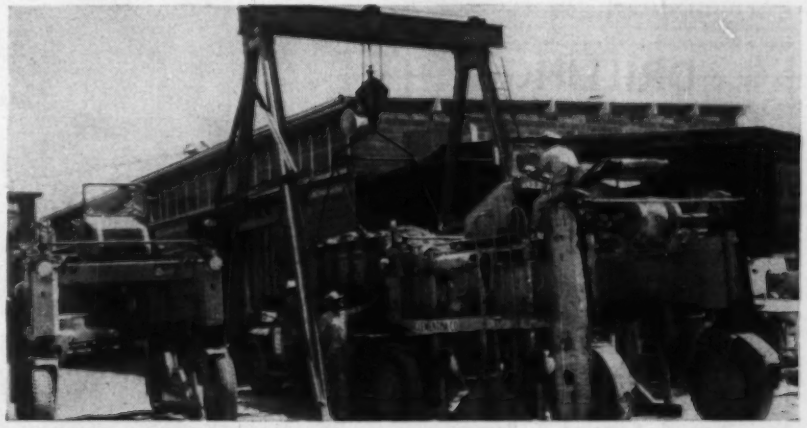
Good housekeeping—so often described as an essential element of safe, profitable construction—has been made easier for San Francisco contractors because of the unusual services performed for them by Clementina, Ltd.

By making a business of hauling scrap and waste from construction sites, Clementina can perform the disposal operations at a fraction of what it would cost the contractor to do it using his own equipment and labor.

Here's how the system works. When a builder calls for Clementina's services, a straddle carrier hauling a steel trash box of 7 cu yd heaped capacity is dispatched to the job site. The box is dropped in a convenient spot and the carrier returns. When the box is filled with accumulated trash, a phone call brings a carrier that leaves an empty box and carts the filled one away.

The containers that Clementina furnishes its customers are 10½ ft long, 5 ft wide and 3 ft deep and have tailgates to facilitate dumping. In the company's yard the carriers deposit full containers under an A-frame and drive off to their next assignment. With the A-frame lift, the container is raised onto a dump truck for removal to a nearby dump. Trash is burned or used as fill.

The system is reported to have a



A-FRAME hoists a filled trash box deposited by the straddle carrier at right. Carrier is immediately free to pick up an empty and return to another job site.

DUMP TRUCK, which has been loaded by means of the A-frame in the company's yard, hauls the filled box to disposal site. Hinged end on box facilitates dumping.

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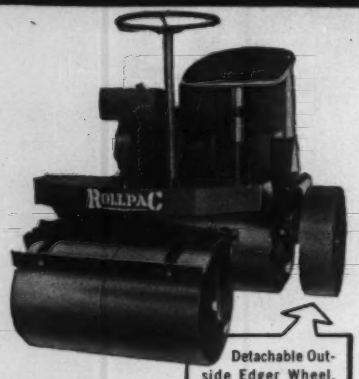

Detachable Outside Edger Wheel. Rolls flush with curb or wall.

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number of advantages for the contractor. First, the building site is cleaner since the trash is removed immediately instead of accumulating for several days or weeks. Second, the labor expense of trash handling is almost eliminated. Trash is placed in the container at once and not rehandled onto a dump truck. Third, the contractor's trucks can be kept on essential jobs rather than being tied up in trash removal.

The contractors who seem to be especially happy with Clementina's services are those working in crowded downtown areas. Restricted space makes long-term accumulation of waste definitely impractical and often impossible. In these spots Clementina's carriers remove waste at least once a day.

However, the location of the job doesn't affect Clementina's flat charge of $8.50 per hour—with paytime starting when the carrier leaves the company's yard and ending when it returns. No charge is made for the use of the waste containers.

Contractors using the service have no complaints about cost. Some have admitted that on a per-ton basis, handling trash with their own men and equipment might easily double the cost.

The use of straddle carriers in their trash removal business has been particularly advantageous for Clementina. Besides hauling scrap, the company does a sizeable volume in contractors' supplies and uses the carriers to make deliveries. The $8.50 per hour cost of service applies here as well.

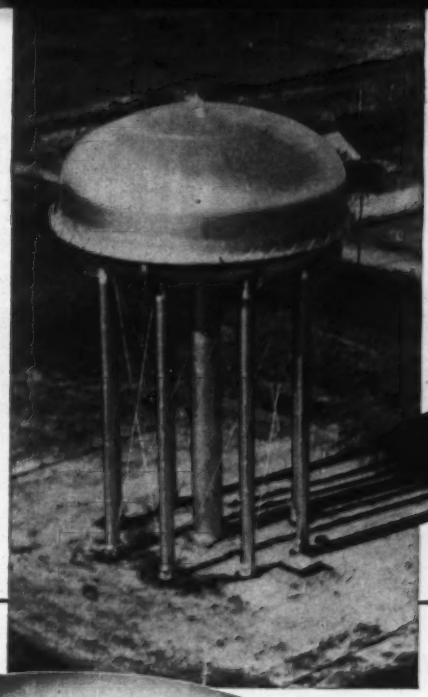
Recently the company contracted to move steel girders to the site of the San Rafael-Richmond Bridge. Over 250,000 lb of heavy, unwieldly steel sections were moved by putting a carrier at each end of the load and driving in tandem.

According to Clementina's co-owners, Al Cleary and Edwin Larkin, the straddle carriers are admirably suited to the dual role of scrap removal and builders' supply service. The company has seven of the carriers which replaced a fleet of dump trucks, and the owners explain that the switch enabled them to slice operating costs in half while doubling their business.

(*Field & Office continued on page 90*)

Fork Trucks Pair Up to Move Tank

Using two fork trucks instead of rigging equipment is reported to have enabled Auburndale Truck Co., industrial haulers of Toledo, Ohio, to move a 40,000-gal storage tank 200 ft in half the time and with less manpower than usual methods. Fork trucks of 15,000-lb. capacity approached the tank from opposite sides, lifted in unison and drove to the new site, one truck traveling in reverse. The tank was moved in ten minutes, and the whole job took four men six hours. The usual method would have required jacking and cribbing the tank to a height sufficient to back a carry-all under it for transport, then repeating the process to lower the tank. The tank is 25 ft high and 20 ft in dia.



At *CORSICANA, TEXAS,* this Radial Cone Bottom PDM Steel Elevated Tank furnishes 750,000 gallons of water storage capacity, with a head range of 25 ft. Diameter is 73 ft.; tower height to bottom line, 81 ft.

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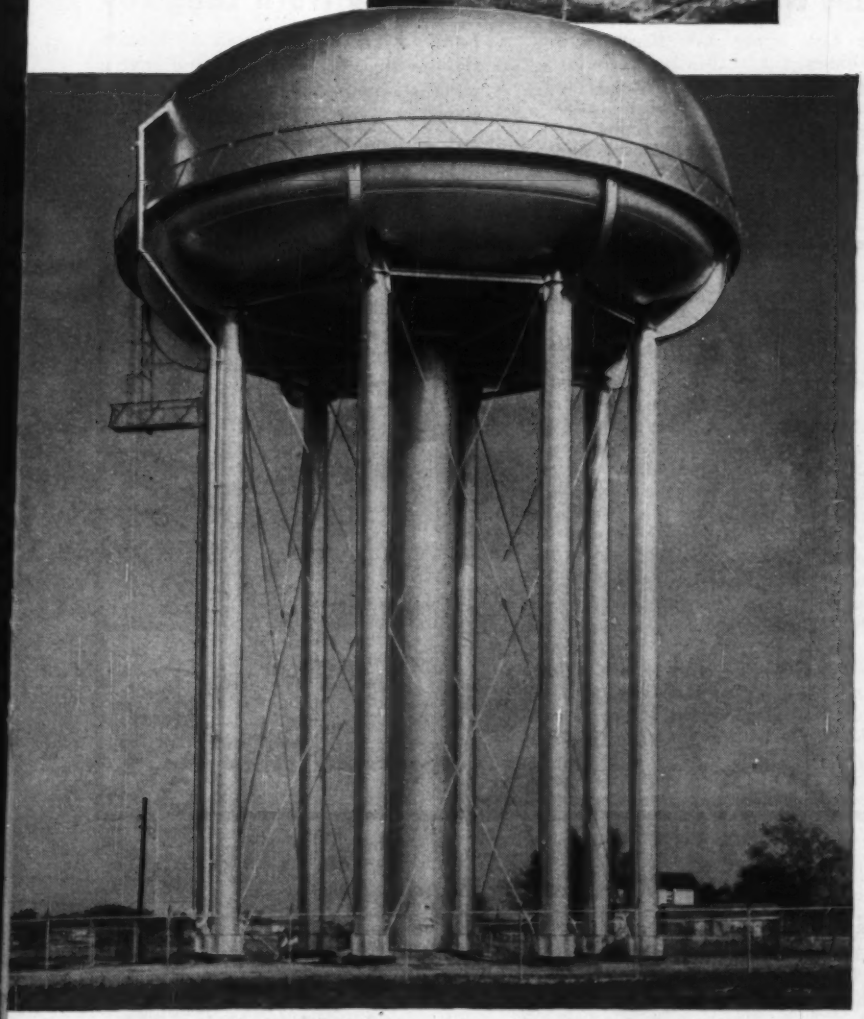

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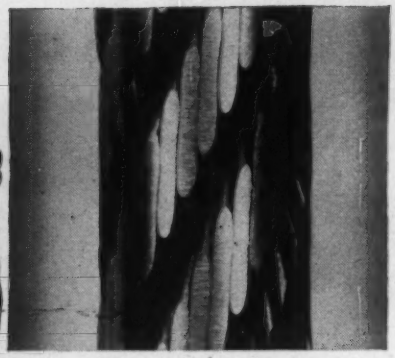
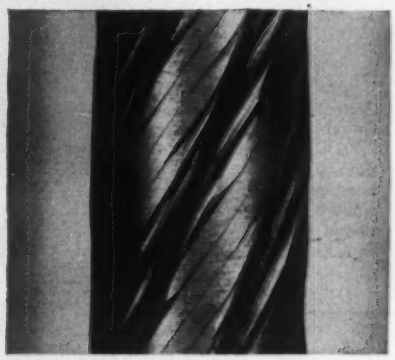
Tuffy® tips on the "lays" and



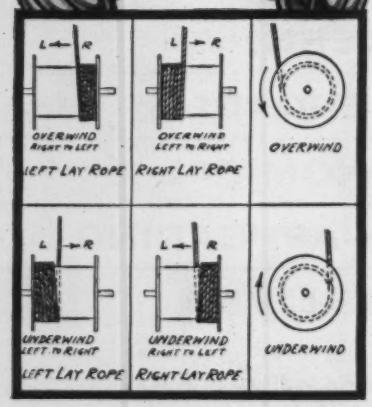
Partially Worn Regular Lay

Regular Lay ropes are used to a greater extent than Lang Lay, because Regular Lay wire ropes stand up better under the hazards of installation and use. Regular lay ropes are less susceptible to drum crushing and are not so readily damaged on sheaves of small tread diameter.



Partially Worn Lang Lay

Lang Lay ropes are about 15% more flexible than Regular Lay, and have a wearing surface *per wire* about three times as great. However, they crush out of shape more easily on small drums and are more easily damaged by sheaves with small tread diameter.



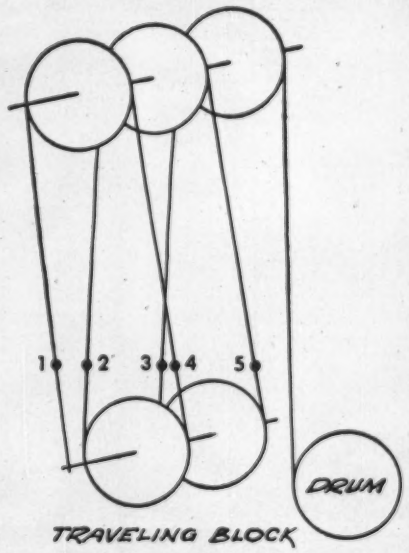
Rope Lay for One Layer Winding

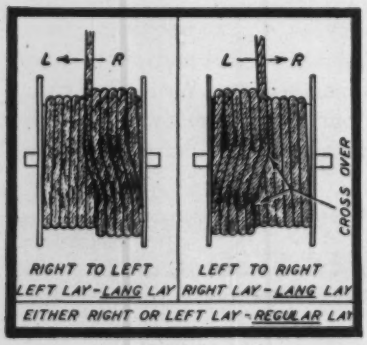
These diagrams show when it is best to use right lay or left lay rope on one-layer winding. The direction of winding is determined by standing behind the drum, looking toward the direction of the rope travel.

How To Count The Number of Parts Supporting the Load

The wire rope on many machines is not used in a single part or direct pull. It is often reeved through sheaves, which multiplies the power applied to the load. Drawing an imaginary line across the reeved rope parts, above or below the "crossing", and counting across gives you the number of parts supporting the load. Always include the rope end to the block, but not the part leading to the drum.

Send For Free Chart Which Allows Easy Figuring of Actual Stress On Rope For Any Given Piece of Machinery Reeving From One to Eight Parts.



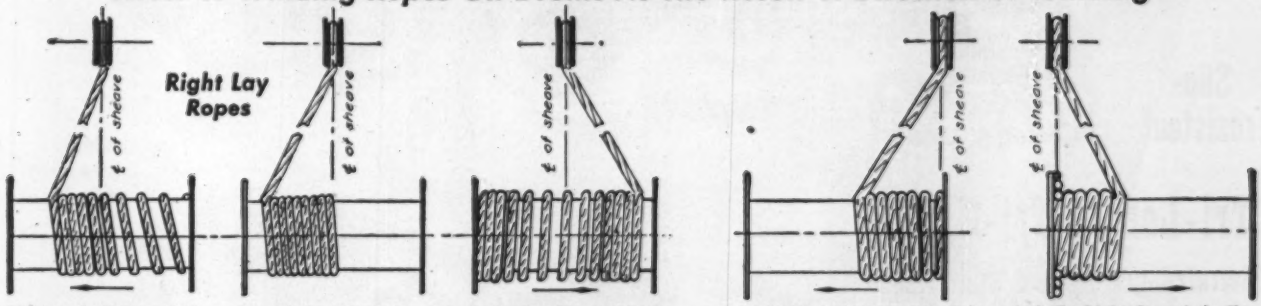


Rope for Two Or More Layer Winding

When a rope winds on the first layer across the face of a drum, it usually travels in a uniform pattern. But when it reaches the flange of the drum, the rope rides on the last strand of the first layer for one turn. Then, it slips into the grooves between each course of rope on the first layer. To move across the drum in this manner, the rope actually winds *back* a turn in each revolution. Then it must jump across *two* grooves in the first layer. This always occurs on the even-numbered layers, and often causes crushing. This abuse is minimized by use of properly designed grooves, spacers and lifters.

reeving of *Wire Rope*

Effect of Winding Ropes On Drums As The Result of Direction of Winding



Right to Left Overwind. Rope winds open to centerline of the drum, then it winds close.

Overwind. Allowed to run freely, the rope winds close to the left from center of drum.

Left To Right. Rope winds close the first four turns, open to center of drum, then close.

Right To Left Overwind. First two turns about 3/16" open, the balance close. Does not build up on flange.

Left To Right Overwind. The rope will build up three to four turns on flange before crumbling, then wind close.

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Put your problems up to Union Wire Rope technicians who work closely and continuously with users and machine manufacturers to lengthen the service life of wire rope through both design and application.

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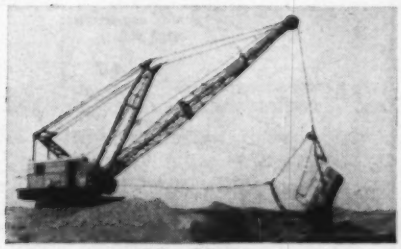
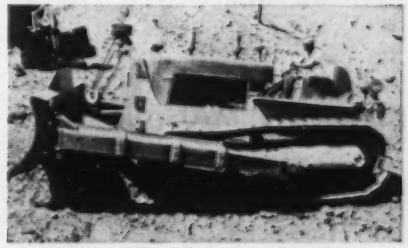
Tuffy Scraper Rope

Mount a reel on your scraper and get full service out of every foot. Specially constructed for scraper service where complex destructive forces overwhelm ordinary rope.



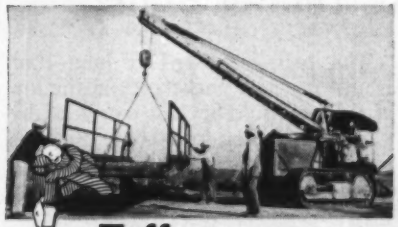
Tuffy Dragline

Flexible enough for easy casting, tough enough to give you maximum abrasive resistance and service life in handling wet or dry, hard or soft materials.



Tuffy Dozer Rope

Has the stamina needed to stay on the job after ordinary ropes are thrown away. In 1/2" or 9/16" size on 150' reels for easy mounting to facilitate cut-off without waste.



Tuffy Slings & Hoist Line

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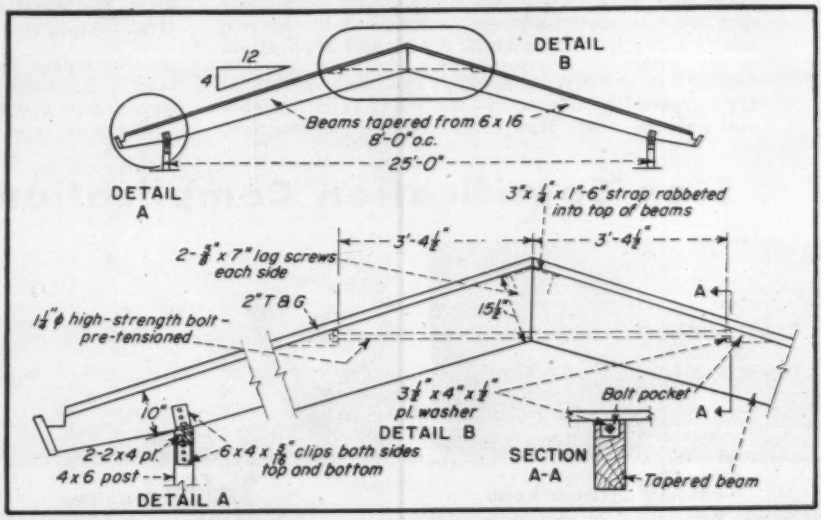
ATTRACTIVE CHURCH INTERIOR results from sawn timber with bents put in compression at peak by hidden bolts. Cost was half that of comparable glued members.



PRESTRESS IS PROVIDED by 1¼ in. dia high strength bolt stressed by torque wrench to 16,000 psi. This ties the 6 in. thick members firmly together neatly.

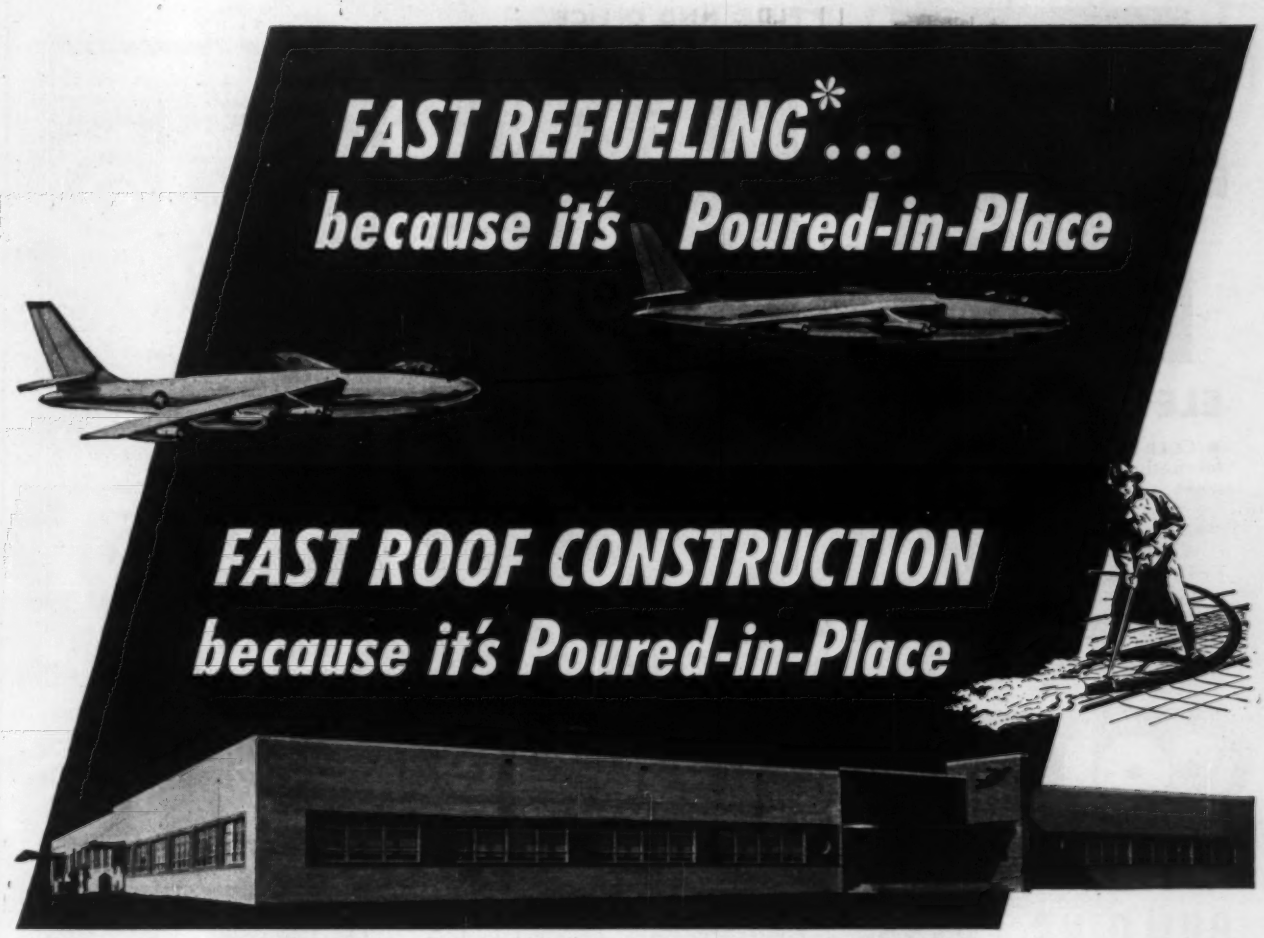
Hidden Bolts Prestress Timber Bents

Attractive timber bents were produced at low cost for a California church by prestressing sawn timbers. Tapered beams with a maximum section of 6x16 in. are held together at the peak of their 12 on 4 slope by 1¼ in. bolts hidden in the members. Result is structurally sound bents at about half the cost of glued timber arches that are frequently used. And cost is an item of maximum importance for churches, such as this, that serve a small congregation.

The bolts—almost 7 ft long—bear against plates in pockets cut in the top of the beams. They are tensioned by torque wrenches to 16,000 psi thus putting the peak of the bents under a compressive stress. This stress firmly ties the sloping members together.

The structure in question was designed for the Washington Community Presbyterian Church of San Lorenzo, Calif., by John Sardis, San Francisco structural engineer.

(*Field & Office continued on p. 92*)



* New headquarters of FLIGHT REFUELING, INC., at Friendship International Airport, Baltimore, Md. *Engineers and Gen. Contractor:* Armiger Construction Corporation, Baltimore, Md. *Roof Deck Applicator:* J. B. Eurell Company, Lansdowne, Pa.

FLIGHT REFUELING, INC., originators of the Probe and Drogue systems of refueling aircraft in flight, specified a fireproof Gold Bond "Firefighter" Roof Deck for their new plant at Friendship International Airport. Nearly 70,000 square feet of incombustible gypsum protects valuable refueling equipment against fire danger.

Gypsum Roof Decks go up fast... *up to 30,000 sq. ft. can be poured in a single day!* They are adaptable to all industrial roof designs — pitched, barreled or flat. The low dead load of a Gold Bond "Firefighter" Roof Deck permits lighter supporting structures, allowing substantial construction savings. Plants like FLIGHT REFUELING, INC., have lower maintenance costs with Gypsum Roof Decks. Roof surfaces can be easily cut or patched to meet any desired modification in design.

Send in the coupon below for full details, including application, specification, recommendation and limitation details, design tables, on-the-job illustrations and roof deck properties.

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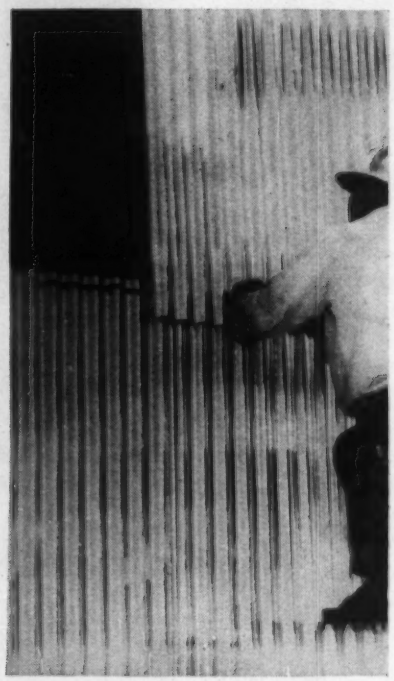
SEALING RIBBON was applied to vertical edge while on the ground.



HORIZONTAL STRIPS attached with sheets in place. Rivets penetrate ribbon.

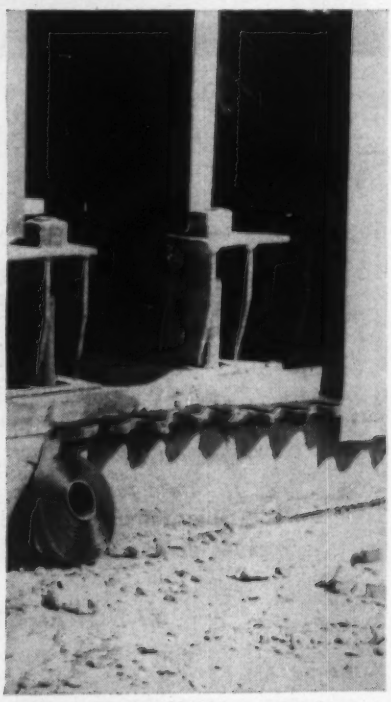
How to Make a Building Dustproof

The Equal Facilities Warehouse at Palmdale, Calif. is located in the desert where it is subjected to high winds and severe dust conditions. For proper protection of millions of dollars worth of aircraft and electronic parts stored there, it was necessary for the entire structure to be sealed to make it dust tight.

The building, which is shared jointly by North American, Convair, Lockheed and Northrup aircraft companies, occupies 500,000 sq ft and is constructed of a steel frame covered with corrugated aluminum sheets. All roofing and siding lap joints, both horizontal and vertical, had to be completely sealed, and the lower rows of siding had to be sealed at the foundation.

A total of 218,625 lin ft of sealing tape was applied from rolls. While the sheets were still on the ground, the tape was applied to the lapping edge running with the corrugations. The sheets were then lifted into place with the sealer attached, and then the horizontal sealer was applied. All sheets were secured by screws and rivets applied to penetrate the siding and go through the sealer ribbon into the structural steel.

Architects and engineers for the job were Daniel, Mann, Johnson and Mendenhall; general contractor was the Vinnel Co.; and sheet metal subcontractor was George D. Widman, Inc.—all of Los Angeles, Calif. The sealing material was supplied by the Presstite Engineering Co. of St. Louis, Mo.



FULL PROTECTION assured by strip over form cut to match corrugations.

(*Field & Office continued on page 97*)

Euclid TC-12

TWIN CRAWLER

COMPLETELY NEW
...in design and performance

2 ENGINES...with Separate Torqmatic Drives...total of 388 horsepower

Euclid, a pioneer in the development of specialized equipment for moving large tonnages in off-the-highway service, announces the TC-12 . . . the first really new crawler tractor in years. It's a new concept of tractor work-ability . . . smooth performance . . . unequalled power . . . ease of operation and maintenance.

Features that give the "EUC" TC-12

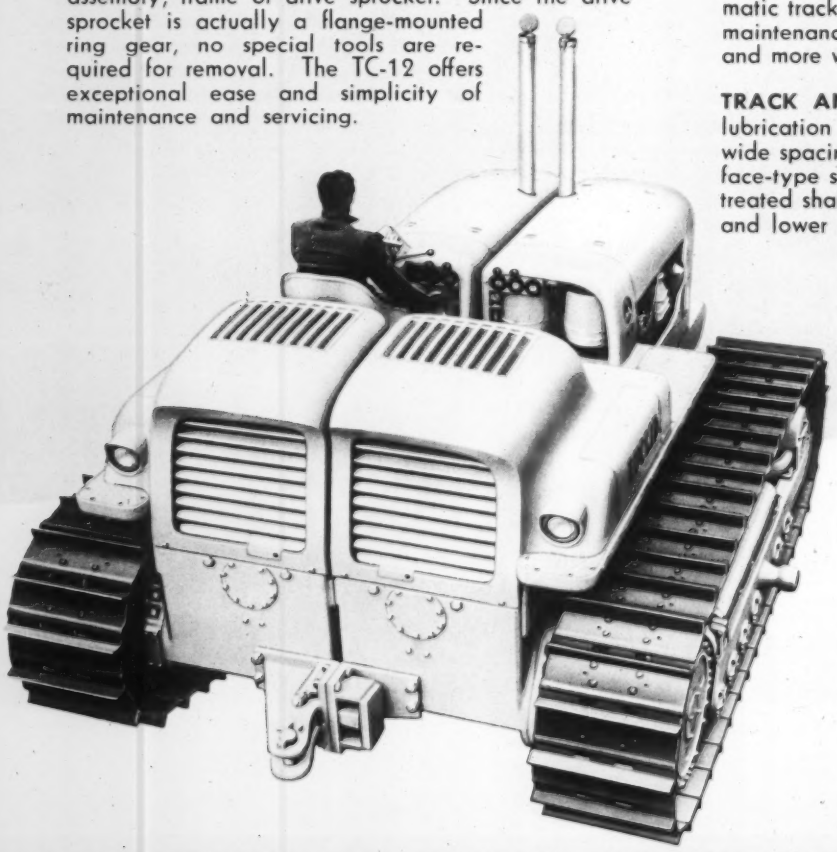
Here, for the first time, is a completely new tractor that's designed and built to provide all the features you want in a crawler tractor. It is years ahead of the field in ability to get more work done—faster—because it's unequalled for power, smooth operation, speed and maneuverability.

Powered by two 194 h.p. diesels with separate Torqmatic Drives for each track, the TC-12 provides a smooth, steady flow of power to meet job requirements. Unique design permits track oscillation for maximum traction on rough, uneven ground. Three speed ranges—both forward and reverse—give any speed up to 8.3 m.p.h.

ACCESSIBILITY for servicing of all major components is unequalled in any other crawler. Unitized assemblies are all easy to get at . . . they can be disconnected, serviced or removed without tearing down other parts. All lubrication fittings, check points, etc., are located for maximum convenience. Fuel tanks have ample capacity for full shift operation.

EASE OF OPERATION is a feature of the TC-12's modern design. The operator has ample room for maximum comfort and unusually good visibility at all times. Torqmatic Drive and independently powered tracks make the tractor easy to operate . . . there's no clutch or manual shifting of gears.

PLANETARY DRIVE is of the same design that has been performance proved in thousands of "Eucs." It can be serviced or replaced without removing the track assembly, frame or drive sprocket. Since the drive sprocket is actually a flange-mounted ring gear, no special tools are required for removal. The TC-12 offers exceptional ease and simplicity of maintenance and servicing.



TRACK OSCILLATION—Twin-Power design, with each half of the tractor separate and connected by only one big transverse shaft, gives the TC-12 maximum stability and traction on rough ground. Each half of the tractor, not just the tracks, can move up or down to maintain better ground contact. Where size or weight restrictions for shipping require, the tractor can be separated into two halves in a very short time.

HYDRAULIC TRACK TENSION—Maintaining proper track tension, a difficult and costly problem with other crawlers, is automatic on the TC-12. Euclid's track tensioning system consists of a hydraulic jack that maintains uniform pressure on the front idler. An accumulator absorbs recoil caused by stones, etc., passing between the drive sprocket and track. Automatic track tension is a feature that pays off in lower maintenance and longer track life . . . less downtime and more work time.

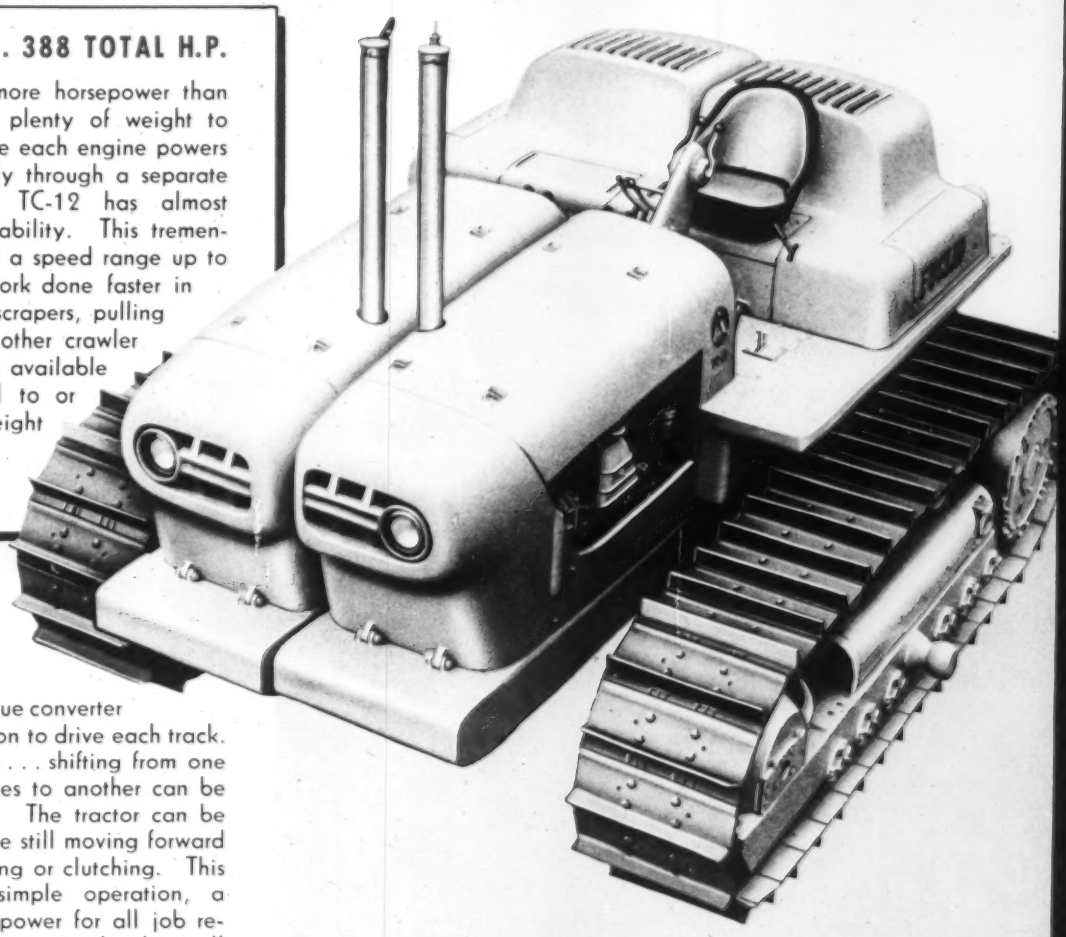
TRACK AND CARRIER ROLLERS have 1000 hour lubrication . . . heavy duty barrel type bearings with wide spacing for maximum support and self adjusting face-type seals to exclude water and dirt . . . heat treated shaft and rollers are integral unit for long life and lower maintenance.

COOLING SYSTEM problems that are common to other tractors are eliminated in the TC-12 due to the rear location of the radiators where there is no obstruction for an ample flow of clean air. More efficient engine operating temperatures can be maintained . . . and with the hinged radiator hoods, replacement of a fan belt is a simple matter, not a major disassembly job.

MORE WORK-ABILITY THAN ANY OTHER CRAWLER

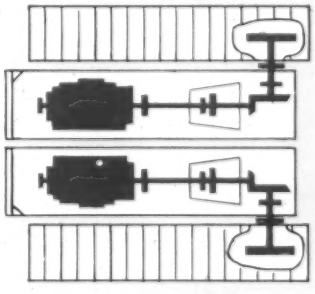
TWIN ENGINES . . . 388 TOTAL H.P.

The TC-12 has much more horsepower than any other tractor and plenty of weight to utilize this power. Since each engine powers one track independently through a separate Torqmatic Drive, the TC-12 has almost unbelievable maneuverability. This tremendous usable power and a speed range up to 8.3 m.p.h. gets more work done faster in dozing, push loading scrapers, pulling cable scrapers or any other crawler drawn equipment. The available drawbar pull is equal to or greater than the gross weight of the tractor and attachments.



TORQMATIC DRIVES

Back of each 194 h.p. engine is an Allison torque converter and torqmatic transmission to drive each track. There is no master clutch . . . shifting from one of the three speed ranges to another can be done under full power. The tractor can be shifted into reverse while still moving forward . . . no delay for stopping or clutching. This power train provides simple operation, a smooth steady flow of power for all job requirements, and develops greater drawbar pull at faster ground speed . . . all important for work with rubber-tired motor scrapers.



Twin-Power — using two engines with separate Torqmatic Drives

INDEPENDENT TRACK DRIVES

With a separate power train for each track, the TC-12 has faster and easier steering with greater flexibility than any previous tractor design. Steering is accomplished by putting either one of the transmissions in neutral and using the track steering brake. Tight pivots can be made by reversing one transmission and keeping the other one in forward speed. Operator has "hair trigger" control of steering at all times in any of the three speed ranges, forward or reverse.

SPECIFICATIONS

Total h.p.—388 h.p. at rated speed.
Speeds — 3 speed ranges, forward and reverse to 8.3 m.p.h.
Drawbar pull (bare tractor)—forward and reverse 54,000 lbs. low range
53,500 lbs. intermediate
53,000 lbs. high
Track width (standard shoe) . . . 26"

Track gauge	110"
Overall width	11' 4"
Overall length	16' 2"
Height (excluding stacks)	7' 11"
Drawbar height	23"
Ground clearance	20"
Operating weight (bare)	approx. 58,000 lbs.

The "EUC" TC-12

...a new concept in *Speed* and *Power!*

With two engines providing a total of 388 h.p. and separate Torqmatic Drives for each crawler track, the TC-12 has no equal for smooth performance, ease of operation and work-ability on any crawler tractor job. It's a completely new tractor with ease of servicing and maintenance that means lower costs and better profits to owners in every field.

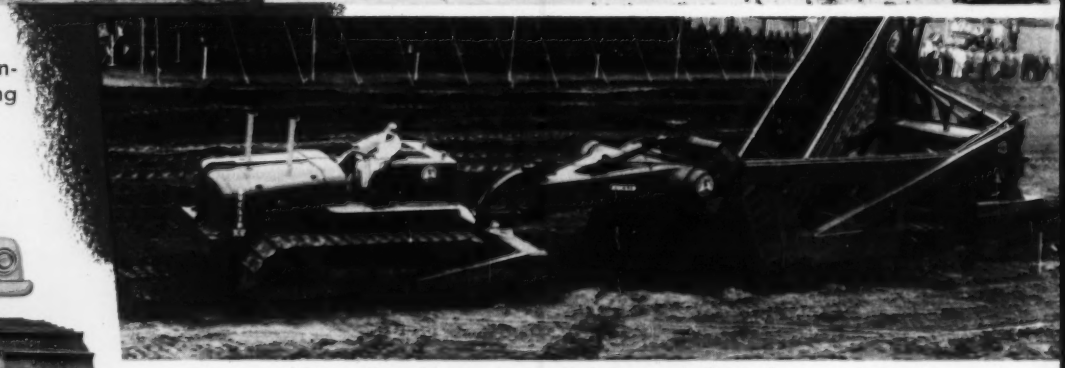
Scrapers are loaded in a higher gear with the TC-12 because of Torqmatic Drive that matches any speed.

Higher working speeds no matter how big the load

Ease of operation and high travel speeds save time on every job.

Power and traction for the toughest jobs and top travel speed of 8.3 m.p.h.

Rear mounted radiators maintain efficient engine operating temperatures.



For pulling big equipment, the smooth flow of tremendous power maintains steady production.

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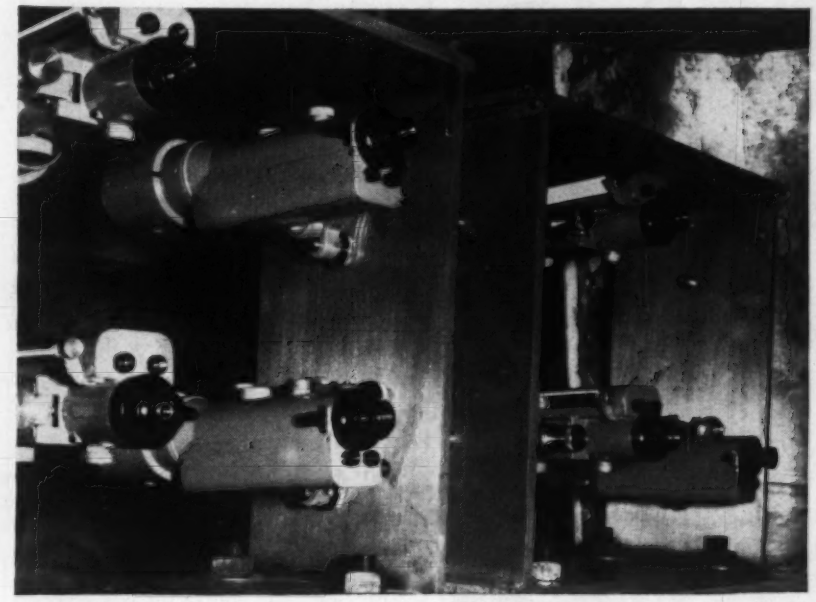


SIGHTING RACKS rigidly support the seven instruments used for the observations.

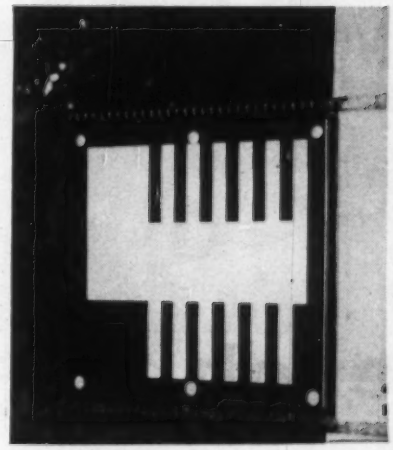
Area of Canal Slide Carefully Eyed

In order to keep a record of any possible movement of the free block of rock on Contractors Hill, overlooking the Panama Canal, and to initiate a record of possible movement of Gold Hill, across the Canal, a system of observation points was established on the Canal faces of each. The points were sighted with seven fixed instruments mounted on a massive concrete pedestal.

The precise levels were mounted perpendicular to their normal positions on the sides of two steel racks which were securely bolted to the concrete pedestal. In the installation of the instruments, the vertical hair of each instrument was brought tangent to the zero mark of its individual target by the manipulation of the footscrews.

Any movement of a target could then be determined from readings of a micrometer screw which—with the instruments in their abnormal position—controls the pivoting of the level in a horizontal plane. The zero of the target was located at the edge nearest the canal so that in any movement of the target outward, the fixed vertical hair will cut into the white graduated face of the target.

The head of the micrometer screw which controls the horizontal pivoting action of the instrument is graduated into 50 divisions. When the vertical hair of the instrument is sighted on the zero of the target for the initial reading, the reading on the head of the micrometer screw is 0.0,



TARGETS are made from black plastic with white core. Outer surface has been machined off to expose white target area.

but at least one complete revolution of the micrometer screw is allowed for. This provides for any possible minus (away from the Canal) movement, sufficient minus movement for calibration of the instrument, a maximum pivoting motion in a plus direction and a positive check when returning the vertical hair to its initial position.

Only total movement of the target is observed, but increment movement can be obtained by comparisons between daily readings. Movements of about ¼ in. can usually be detected.

The method described provides a positive means of observing small horizontal movements, but, generally, sights should not exceed 4,000 ft.

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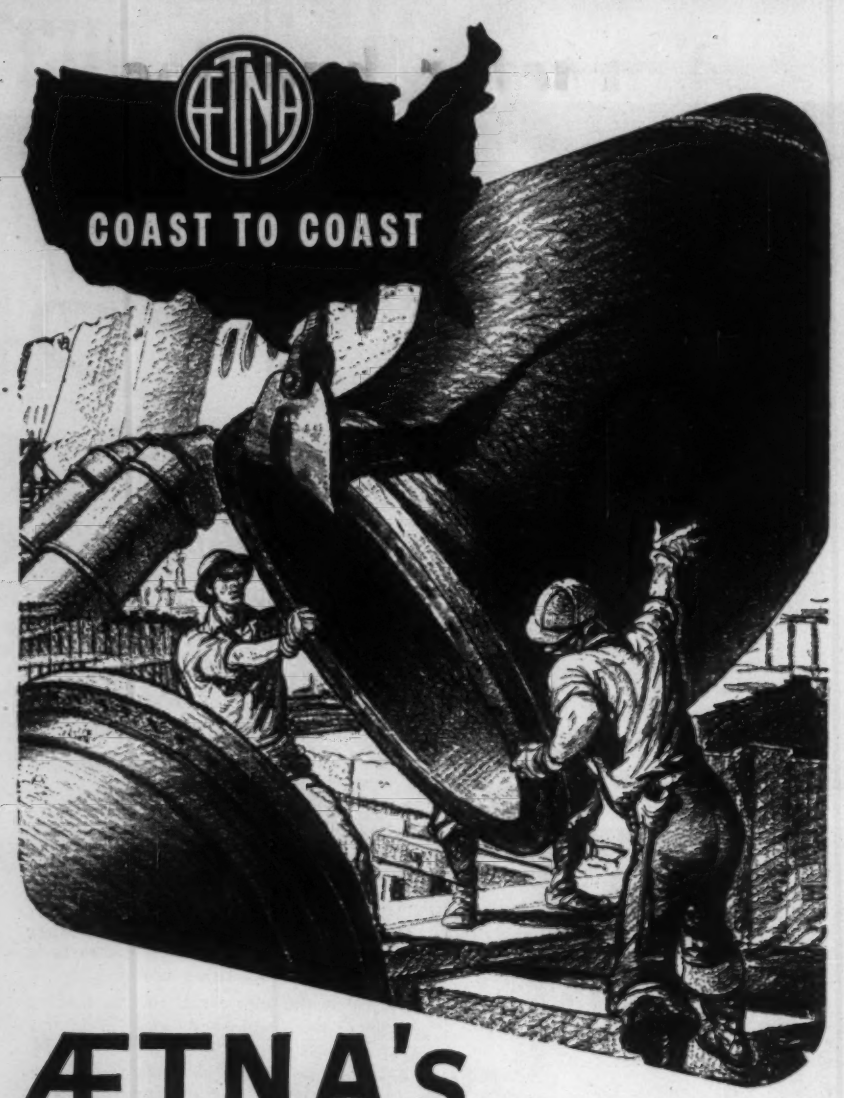

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LEGAL

Wrongful Withholding Is Breach of Contract

A construction contract provided for the withholding of 10% of the value of the work done. Because the party for whom the work was being done was short of funds, the engineer made false estimates of the value of the work completed so that the alleged 10% withheld was considerably more than it should have been. The contractor stopped work, brought an action to recover damages for breach of contract, and obtained a judgment which was affirmed on appeal.[1]

The court found that the engineer had unreasonably and arbitrarily refused to approve the proper amounts for progress payments. Such conduct was tantamount to fraud and bad faith and constituted a breach of contract. The contractor was justified in ceasing further performance and in bringing an action to recover the fair and reasonable value of the work performed.

(1) Smith v. Empire Sanitary District, 273 P. 2d 37 (District Court of Appeal of California, August 1954).

Right to be Compensated For Work That's Illegal

As a general rule, courts will not enforce contracts that are illegal or violate local statutes. An architect, for example, cannot recover for services rendered in preparing plans for a building that do not comply with set-back restrictions or other local requirements.[2]

Courts have allowed recovery in some cases, however, where the work was illegal when performed but could have been performed in a legal manner. Such a case[3] recently arose in Chicago where a contractor sued to recover compensation for some building alterations and improvements.

The owner's defense was that he had not complied with the local building permit requirements, thus rendering the work illegal. The lower court felt that the illegality, which would bar recovery by the contractor, could be cured and suggested that the contractor get a permit. A permit was obtained and the court refused to dismiss the action.

The owner appealed, claiming the contractor's action should not be entertained because the work was illegal when done. After referring to the local ordinances, the upper court had this to say: "These ordinances do not prevent recovery in the event a permit is not first obtained, but exact penalties for their violation. We construe

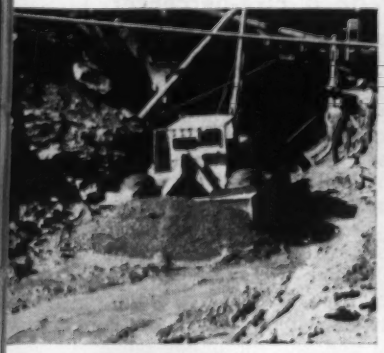
HOW 1 tractor handles 8 jobs every 8 hours

8:00 A.M. Tournatractor cleans up around shovel in ore pit...

These on-the-job photos show how Tournatractor's 19 mph "run-about" ability can help you maintain steady production.

At this plant in the iron range in Minnesota, Tournatractor's main job is cleaning around the shovel. It uses normal waiting periods to maintain the rock dump... clean spillage at the crushing plant... feed material from surge pile to hopper. Tournatractor is also ready at a moment's notice to clear second-growth timber or to "lend a hand" when the crusher plant crew makes screen adjustments. In its spare time, Tournatractor builds and maintains haul roads, handles clean-up around the plant, improves drainage, cleans banks of washed-in spoil, levels for drill moves and set-up. It travels to each assignment, finishes it, gets back to the shovel FAST.

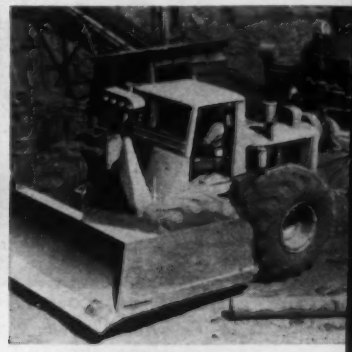
If *your* work includes a lot of widely-scattered dozing and hauling jobs—cleaning around shovels and at dumps, push-loading scrapers, plowing snow, or clearing land—you'll want to know more about Tournatractor. Let us show you how 1 of these tractors-on-rubber can do the work of 2 or 3 tractors-on-crawlers. Write or call soon!



8:48 Travels .4 mi. to crusher, cleans up drain spillage.

9:25 Runs .2 mi., and levels taconite-rock dump...

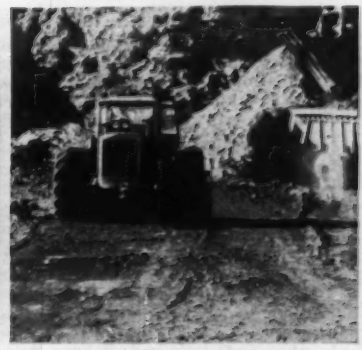
9:34 Returns .6 mi. to pit for more clean-up at the shovel.



11:45 Drives .4 mi. to help crew adjust screen at crusher.

11:55 Feeds material from surge pile to hopper at crushing plant.

12:20 P.M. Speeds .2 mi. back to rock dump for more leveling...



12:25 Drives .6 mi. to pit, cleans up again around shovel...

3:45 Goes .4 mi. to surge pile, feeds hopper. Next shift, 4:00 to 12:00.

Tournatractor—Trademark Reg. U.S. Pat. Off. T-695-G-b

LeTourneau-WESTINGHOUSE Company
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A Subsidiary of Westinghouse Air Brake Company

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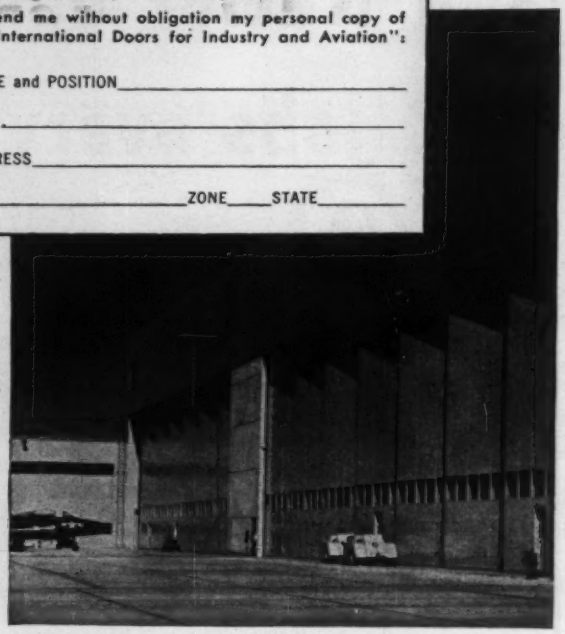

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INTERNATIONAL HANGAR DOORS

INTERNATIONAL-BUILT motor and manually operated hangar doors at

GRUMMAN AIRCRAFT ENGINEERING CORP.
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OFFICE OF ALFRED EASTON POOR,
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SEELYE, STEVENSON, VALUE & KNECHT,
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Architectural specification of these International Doors was based on two prime points: (1) Specialized experience in the design and fabrication of doors to meet unusual entrance needs. (2) Demonstrated ability to meet such requirements on schedule — and economically.

Almost 500 tons of steel went into this International installation at Grumman's Peconic River Plant and Facilities. Almost 100 door leaves, providing a total opening area of 60,000 square feet, afford weathertight protection when closed. And all are engineered to insure ready operation regardless of climatic conditions.

When considering doors for any industrial or aviation application, investigate International's facilities and abilities . . . both proved the surest way, by the preference of America's major industries.

See Sweet's Architectural or Industrial Construction File for complete catalogs.

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INTERNATIONAL SERVICE

INTERNATIONAL STEEL COMPANY

LEGAL

the ordinances to mean that penalties may be exacted in case of violation, but there are no prohibitory words incating that a party is excluded from recovering on the contract. The ordinances were presumably enacted in order to give the building department an opportunity to deny a permit for valid reasons, but if the work has been done safely and lawfully no harm has been done."

In allowing the contractor to seek recovery, the court made this observation: "The laws and public policy of the state permit and require the utmost freedom of contracting between competent contracting parties, and it is only where a contract expressly contravenes the law or the known public policy of the state that courts will hold it void."[3]

[1] Bott v. Moser, 7 S.E. 2d 217
[2] Meissner v. Caravello, 124 N.E. 2d 615, Appellate Court of Illinois, Dec. 13, 1954
[3] Zeigler v. Illinois Trust and Savings Bank, 245 Ill. 180, 91 N.E. 1041

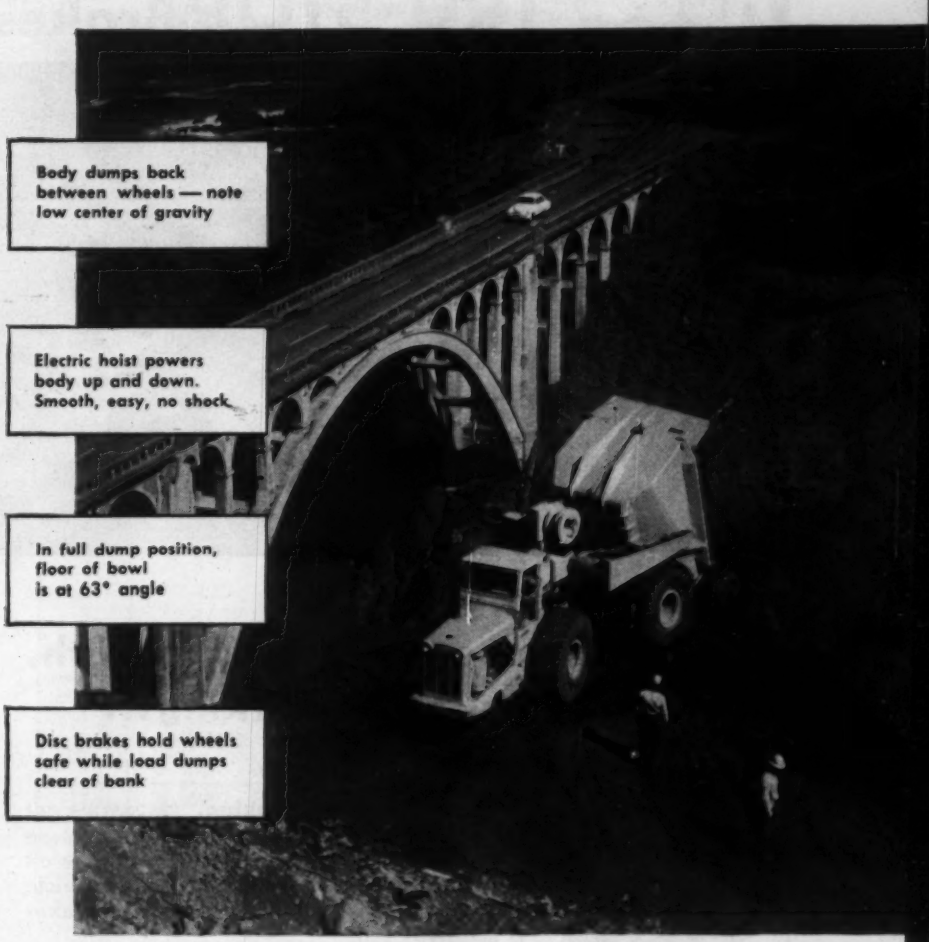
You Can't Enforce Contract Made With a Five-percenter

Contracts made with persons to use their influence with officials of various branches of the government to obtain contracts are considered illegal because they are against public policy.[1]

This issue was involved in a recent case in which the court stated: "There is no precise definition of public policy, and consequently no absolute rule of admeasurement, making it necessary to judge and determine each case, as it arises, according to its own peculiar facts and circumstances. It has often been said that the public policy of the State is to be found in its constitution and its statutes, and when cases arise concerning matters upon which they are silent, then in its judicial decisions and the constant practice of government officials. Courts will not look to other sources to determine the public policy of a state. First Trust & Saving Bank v. Powers, 393 Ill. 97, 65 N.E. 2d 377; Ziegler v. Illinois Trust and Savings Bank, 245 Ill. 180, 91 N.E. 1041, 28 L.R.A., N.S., 1112. Looking to questions of contract generally, we have uniformly held that where a contract is illegal or against public policy a court of equity will not, at the instance of one of the parties who participates in the illegal or immoral intent, either compel the execution of the agreement or set it aside after it has been executed, because to give relief in such a case would injure and counteract public morals. The application of the rule is not in the interest of any party to

(Continued on page 102)

Dumps anywhere— over-the-edge or on-the-move

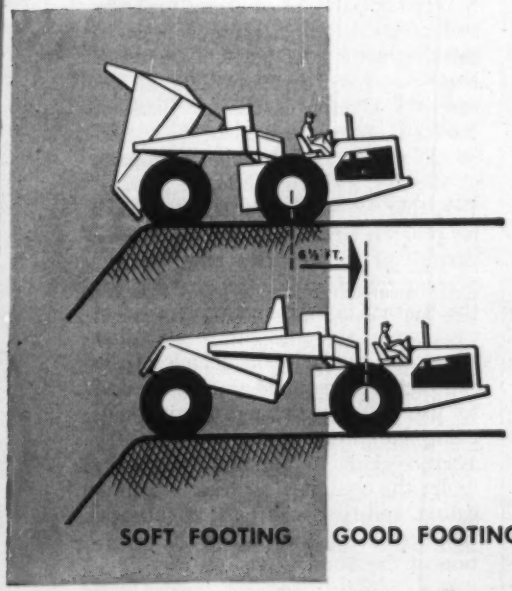

Body dumps back between wheels — note low center of gravity
Electric hoist powers body up and down. Smooth, easy, no shock
In full dump position, floor of bowl is at 63° angle
Disc brakes hold wheels safe while load dumps clear of bank

Tournapull Rear-Dumps can go anywhere—on or off-the-highway — to place loads exactly wherever you want them.

To dump over the edge of bank, all you do is back close to dump point. Rig's big single tires and power steer take you over rough footing and soft fills where many trucks can't go. Dump is made by flicking electric switch on control panel. This instantly activates hoist motor. Body "rocks" back easily over rear axle. You have power up and power down. Movement is under positive cable control at all times, can be stopped at any angle. At full dump angle, bowl lip is at ground level *behind* rear wheels. This position prevents material from rolling forward under wheels. It also provides free dump over edge of bank and greatly reduces need for dozer cleanup.

Safe at all times

In dumping, Tournapull Rear-Dumps are safer than any truck. Front-wheel-drive keeps power and traction on solid footing well ahead of rear wheels. Because body does not need to clear frame, springs, axle, or differential, its center of gravity stays low, even during dump. Oversize multi-disc air brakes — *with more braking surface on one wheel than comparable-size trucks have on all four* — prevent creeping or rolling.



Separate braking of front and rear wheels can be used with action of hoist to help front wheels pull away from edge of soft dump. In case of trouble, rear brakes are set, front brakes released. When bowl is lowered from normal dumping position, free-rolling prime-mover wheels are pushed forward. On the "C" size Rear-Dump, they move 6½ ft. — usually enough to find good footing. If front drive wheels do not reach good footing after bowl is lowered, same "leap-frog" process can be repeated. Simply pull rear wheels forward by setting front brakes and raising bowl, then set rear brakes and push front wheels ahead by lowering bowl.

Accurate spreads while moving

Tournapull Rear-Dumps can also spread on the run. Bowl can be safely raised and lowered at normal haul speed. Operator simply positions bowl for desired flow of material and continues to drive.

There's a Tournapull Rear-Dump size to fit your needs

"D"	"C"	"B"
9 TONS	22 TONS	35 TONS
138 HP	208 HP	293 HP

Prime-movers for these Rear-Dumps also power scrapers, bottom-dumps, flatbeds, and cranes.

Tournapull—Trademark Reg. U.S. Pat. Off. R-778-G-b

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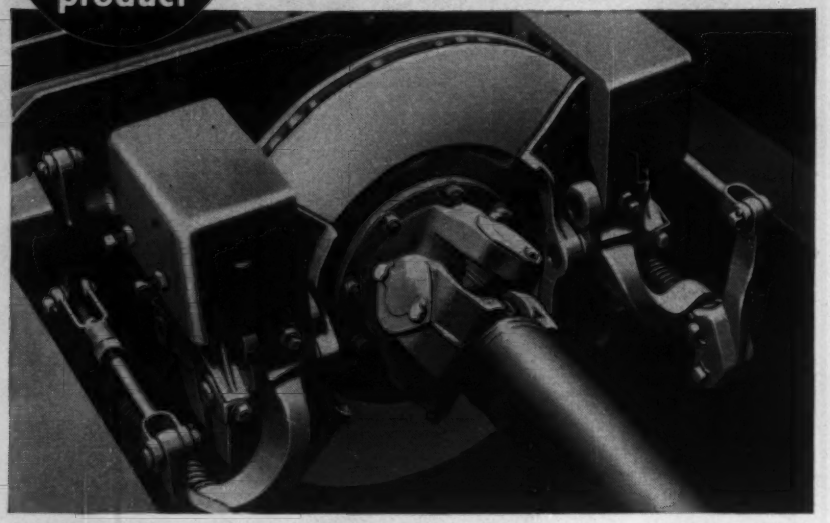
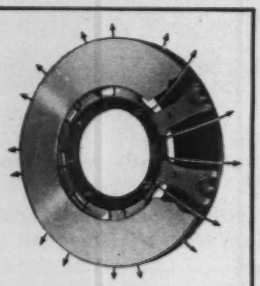
It Pays to Specify TRU-STOP Brakes



because they give you Real Emergency Braking...Smooth, Positive Stops...Safe Parking... and Lower Service Costs



Longer Lining Life

• The terrific heat generated in braking cuts lining life. TRU-STOPS quickly dissipate this heat. Most of the disc is exposed to the air even during braking. And a cooling jet of air circulates through the disc, prolongs lining life.

Real Emergency Braking. TRU-STOPS *are real emergency brakes—not just "parking brakes."* They serve as auxiliary brakes on long down-grades and can bring the vehicle to a smooth, quick stop if service brakes suddenly fail.

In fact, TRU-STOPS can do this and more. They can handle the vehicle with safety so it can be removed from the road.

Smooth, Positive Stops. Pressure is in direct proportion to the pull on the brake lever. There is no dangerous self-energizing or "over-braking."

Safe Parking. TRU-STOPS hold on grades—prevent "parking brake" accidents.

Lower Service Requirements. TRU-STOPS are mounted directly on the drive shaft. Their simplicity of design and accessibility reduce maintenance requirements. Relining or adjustment is a simple job for any mechanic with ordinary tools. It is not necessary to drop drive shaft.

Specify TRU-STOPS for factory installation on your next vehicle.

This Booklet gives the complete story on TRU-STOP Brakes. Send for your copy today

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the transaction but in the interest of the general public and, once the point appears, it is the duty of this court to apply the rule even though it is not urged by either party. Vock v. Vock, 365 Ill. 432, 6 N.E. 2d 843, 109 A.L.R. 1170."[2]

[1] Stone et al. v. William Steinen Mfg. Co., 39 A. 2d 241; 17 Corpus Secundum, pages, 573, 577; 12 American Jurisprudence, pages, 703, 707, 711.
[2] Schnackenberg v. Towle, 123 N.E. 2d 817, Supreme Court of Illinois, Nov. 18, 1954.

Surety Who Pays on Default Acquires Right of Creditor

Where a surety bond provides for the payment of labor and materials and the surety pays for such labor and materials after the contractor defaults, the surety can claim subrogation to any payments due the contractor.[1]

The court stated: "The rights and status of a surety on a performance bond with respect to progress payments and retainage funds under a construction contract such as is here under review are no longer in doubt under the decision of this court. While numerous authorities have been cited by counsel on both sides, we need only refer to a few. In the cases of First National Bank of Aberdeen v. Monroe County, 131 Miss. 828, 95 So. 726,727, and Mississippi Fire Inc. Co. v. Evans, 153 Miss. 635, 120 So. 738, we held that in a contest between the contractor's assignee and the surety, the surety has no superior equity in the progress payment funds over the assignee which entitles it to have such funds applied in exoneration to the payment of claims for labor and materials which accrued prior to the contractor's default. On the other hand, we have expressly held in the cases of Canton Exchange Bank v. Yazoo County, 144 Miss. 579, 109 So. 1, and Jackson Lumber Company v. Moseley, 193 Miss. 804, 11 So. 2nd 199, that where the contract provides for progress payments not to exceed 85 percent of the contract price and 15 percent retainage, the retainage is for the mutual benefit and protection of the owner and the surety and that where the surety, upon default of the contractor, is required under its bond to pay bills for labor and materials going into the construction, he may assert a claim to the retainage funds under the equitable doctrine of subrogation, and that such right of subrogation begins as of the date of the execution of the bond."

[1] State v. Malvaney, 72 So. 2d 424, Supreme Court of Mississippi.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)

On cycle described, "C's" loaded in cut at top of hill, spread in hollow in foreground. Despite heavy rain which caused frequent production slowdown, rigs kept dirtmoving "right on the 200-day schedule."

11,455 loads in 43½ days

on 1000 to 2000′ one-way hauls for three 16-yd. scrapers

Machines: 3 C Tournapulls, without sideboards
Material: Mostly sandy clay & soft clay rock
Pusher: 148 hp crawler
Average one-way haul: 1000 to 2000 ft.
Average load: 10 to 11 pay yards
Average load time: 50 to 60 seconds
Length of shift: usually 9 hours, occasionally 10

WEEK	TOURNAPULL 1	TOURNAPULL 2	TOURNAPULL 3	NO. OF WORK DAYS IN WK.
1	457	424	472	5
2	425	375	425	5
3	463	577	556	5
4	523	533	515	6
5	528	534	448	6
6	327	316	310	4 (rain)
7	268	336	342	4 (rain & holiday)
8	218	231	232	2½ (rain & holiday)
9	533	556	531	6
TOTAL	3742	3882	3831	43½

Averages for 3 machines: 3818 loads for the 43½ days — 263 loads per day — 88 loads per day per machine

The above figures were taken from accurate records kept by Moss-Thornton Co., Inc., Leeds, Alabama, on 3 of their 16-yard C Tournapulls. These veteran units helped build a new 2 and 3-lane road for 9 miles between Nauvoo and Natural Bridge, Alabama. The new route will be a part of a new Birmingham-Hamilton Highway.

Average 88 trips daily on 2000′ cycle

Moss-Thornton's "C's" here worked in hilly country typical of the area. Cuts ranged up to 62′, fills to 60′. On the hillside cut shown, rigs loaded in both directions to save pusher return. With their narrow 10′8″ width and short 15′ turning radius, turn within cut was so easy rigs averaged only 4.8 minutes for the 2000′ cycle. This included about 0.9 minutes to load 10 to 11 pay yards of dry, sandy clay... plus time to return up 600′ of 7½% grade. Each unit averaged 12 loads per 55-minute hour on the 2000′ cycle... about 100 loads per 9-hour day. In a 43½-day period, combined output for the 3 "C's" was 11,455 loads. Total yardage figured out well in excess of 115,000 pay yards.

Interchange scrapers, rear-dumps

In addition to this highway job, Moss-Thornton's Tournapulls have handled the following dirtmoving assignments since their purchase in 1952... one 4-lane road widening job north of Birmingham... a 2-lane relocation west of Birmingham... another 4-lane contract south of Birmingham, one at Cordova, and another at Raglan. For hauling shovel-rock on another assignment — a dam at Demopolis, Ala. — Tournapull-Scrapers were unhitched and prime-movers used with interchangeable 17-yd. heaped capacity rear-dumps. Tournapull-Scrapers also leveled site for new aluminum plant at Sheffield, Alabama, plus a group of small jobs in Calhoun County. All job-to-job moves were made under rigs' own power. Trip to Nauvoo job, for example, a distance of 65 miles, took 3½ hours. Rigs lost no time for loading or unloading... got right to work!

"Only thing to move dirt with"

"I sure like our Tournapulls," says Superintendent A. J. Roth. "They turn short — in fact, they're the only things to move dirt with!"

Where peak production really counts ... *you*, too, can count on Tournapulls! There's a size to fit your needs. Available now is the new 293 hp, 23-yd. "B"... the 208 hp, 16-yd. "C" described here... and the improved 138 hp 7-yd. "D". We'll be glad to show you any or all 3 sizes in action. Call or write us today to arrange time and place.

Tournapull—Trademark Reg. U.S. Pat. Off. P-802-H-b

LeTourneau-WESTINGHOUSE Company

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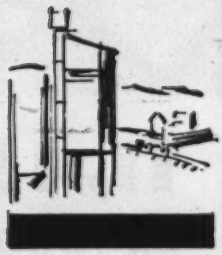
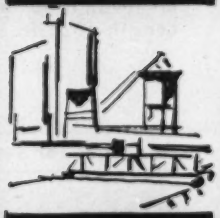
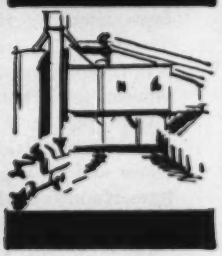
New Heltzel







Heltzel's 100 ton three compartment Type-3 portable aggregate plant equipped with two 1½yd. fully automatic batch truck batchers. The plant features Heltzel electronic controls which enables one operator to dispatch eight batches per minute.

portable highway paving plant

DELIVERS THREE ACCURATE BATCHES EVERY 25 SECONDS ON TURNPIKE OPERATION

Keeping two dual drum pavers working simultaneously calls for fast batching; working to turnpike specifications calls for accurate batching; working paving contracts calls for portable equipment.

The new Heltzel Series III Batchmasters are the fastest, most accurate, portable batching plants available today. That's why, when Central States Construction Co. was awarded a contract on the Ohio Turnpike, they came to Heltzel for their batching equipment.

Heltzel designed a 440 bbl. plant, with storage facilities for an additional 2000 bbls. of cement, that will deliver *three batches, discharged into a truck, every 25 seconds* with an accuracy to within one-tenth of one percent. The plant is exceedingly portable, designed for quick erection and dismantling. It is fully automatic, interlocked with provision for immediate manual operation in case of power failure. It is complete with a Heltzel 325 bbl. per hour elevator. Automatic 16 cu. ft. batchers are equipped with 1000-lb. easy-to-read dial scales and the exclusive Heltzel Combination Rotary Feed Tubular Valve, which makes possible this great speed and extreme accuracy.

The aggregate setup consists of a Heltzel 100-ton, three compartment plant with 2 one and one-half yard fully automatic aggregate batchers equipped with 5000 x 5 lb. dial scales. The plant weighs and discharges an amazing *eight complete batches per minute* to an accuracy of one-tenth of one percent.

Central States has operated the plants in paving 300,000 yards of concrete, running them to capacity 10 - 12 hours at a time, without let up, and find they meet specifications in every way.

If you want speed and accuracy, big capacity and portability, look over the new Heltzel Batchmasters before you buy.

Heltzel 400 bbl. Portable E-2 Plant with two 1050 bbl. recirculators and a 325 bbl. per hour Heltzel cement elevator. The plant is equipped with two fully automatic 16 cu. ft. cement batchers featuring electronic controls and the exclusive Heltzel Combination Rotary Feeder Tubular Valve.

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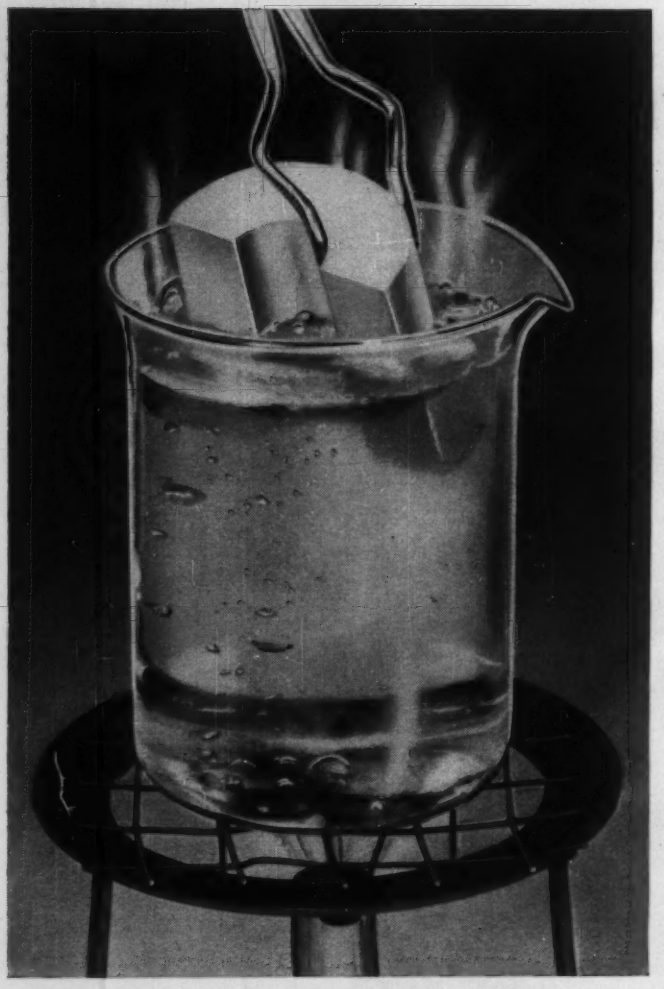
stability...



just one of many reasons why KAYLO® is the king of high temperature insulations

Other high temperature insulations may look like Kaylo—but performance brings out the difference. Take stability, for instance.

Even when soaked in water for long periods, or immersed in boiling water, Kaylo (hydrous calcium silicate) not only refuses to break down but, after drying out, shows no apparent shrinking or warping! And its original thermal efficiency and exceptional strength return, too! Moreover, it can be removed and replaced for line inspection without waste.

No wonder Kaylo is called "king of high temperature insulations!"

Together with Fiberglas*—the world's leading industrial insulation—Kaylo rounds out the most complete and versatile line of plant insulations available. It is distributed by Owens-Corning Fiberglas Corporation, and is made both as block and molded pipe insulation with the widest range of sizes, forms and thicknesses of any high temperature insulation.

For complete technical data, see our listings in Sweet's File, Chemical Engineering Catalog, or Refinery Catalog. Or write: Owens-Corning Fiberglas Corp., Dept. 145-G-21, Toledo 1, Ohio.

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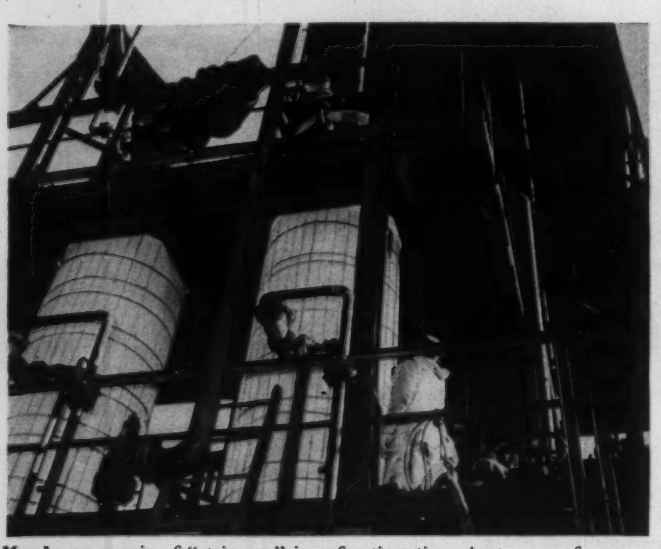
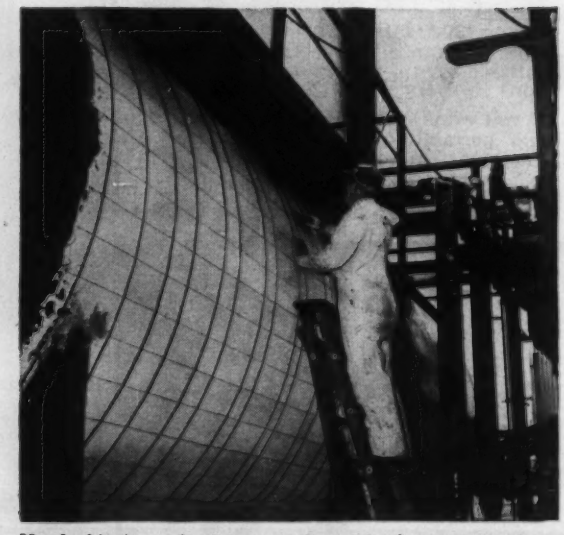


Kaylo on a pair of "strippers" in a fractionating plant, one of an increasing variety of industrial applications.



Kaylo block on desalter tank. Strength of material and large units mean more economical application, less waste.

Lagging Public Construction — A Spreading National Blight

The most recent editorial in this series dealt with the plans of American industry for expanding and modernizing its plant and equipment over the next four years. These plans call for the expenditure of $113 billion over that period. There is a good prospect that the money to carry them out will be available. If the plans are carried out, manufacturing capacity at the end of 1958 will be double that which existed at the end of World War II. And this industrial plant will be modernized.

In sharp contrast to this picture is the condition of our *public* plant and equipment — the roads, schools, water supply, health and sanitation facilities upon which industry, as well as the average family, depends. **According to a recent estimate by the Twentieth Century Fund, the people of the United States must spend almost $100 billion on new public works projects during the next five years merely to meet the minimum needs of our growing economy.**

Other estimates by the President's Council of Economic Advisers, by state agencies and by private construction economists all show the same condition: a staggering need for public works. Yet no steps have been taken that even offer a promise of closing the gap between the public facilities we are building and the greater facilities we really need.

How did we come to let our public facilities fall into this sorry state? Here are some of the reasons:

(1) During the years of depression and war, from 1930 to 1945, these facilities were neglected. New construction declined, and even maintenance was cut.

(2) Since the end of World War II, increased construction costs have made it difficult for communities to get the needed construction with the funds budgeted in the past for that purpose.

(3) The great postwar upsurge in population, and the spreading of our population into new areas, has created a huge demand for additional community facilities before the neglect of earlier years could be made up.

Responsibility Divided

Now the need for more public construction has become apparent to everyone, on jammed highways and in over-crowded schools. But, unfortunately, the responsibility for doing something about this situation cannot be so clearly fixed as can the responsibility for maintaining industrial facilities. A business firm must expand its capacity when markets are growing or lose its trade position. It must modernize its plant and equipment or be undersold by more efficient competitors. In the case of public facil-

ities, there is no such competitive incentive. To be sure, a city or state may lose population and industries if its public facilities are inadequate. But such shifts are very slow to take place and difficult to relate to any specific public program, or lack of it.

Moreover, the responsibility for constructing public facilities is divided between state and local governments and federal authorities. Within each of these governmental units there are specialized bureaus or departments with varying responsibilities. This division of responsibility obviously adds an element of difficulty to the development of an adequate program of public construction.

Breaking the Log-Jam

How can this administrative log-jam be broken and the financial difficulties overcome?

One course would be to have the federal government step in with a nation-wide new program of direct spending on public works. That would utilize the resources of the federal treasury for immediate action. But there are weighty objections to such extensive federal participation. One is that federal spending cannot be greatly enlarged without a corresponding increase in the federal control of decisions that normally have been left to local communities. Another objection is based on the fact that so long as we must maintain a large defense establishment, such an addition to federal spending means either higher taxes or a chronically unbalanced budget.

The other course is to rely primarily on local initiative, but with new and more effective federal aid to local governments. Such aid would help speed up planning and construction, and contribute toward a solution of the most burdensome financing problems, but in amounts sufficiently limited to require that most of the capital be raised locally.

No Single Formula

No one formula can be applied to make such aid effective. The raising of funds for new schools, for example, involves problems very different from those of financing highways, or water-works, or hospitals. But it does seem clear that, in all these fields, the federal grants must be designed to stimulate more local planning and financing than has prevailed in the past. Among the new ideas that may offer such incentives are federal grants for planning and initial costs and federal guarantees of local bond issues. Such aids have been remarkably effective in the fields of slum clearance and public housing.

While the federal government clearly has a role to play, we cannot afford to postpone inauguration of an adequate public construction program while we seek a formula to apportion governmental participation that would be generally accepted as ideal. Every year about 2½ million more Americans are putting increasing pressure on a public plant already dilapidated and inadequate. The result is an increasing menace to comfort, health, education and safety. It is also an increasing menace to the effective performance of American industry.

The appropriate public response to this situation is a driving public determination to eliminate this increasingly dangerous lag in public construction. At this juncture, the development of such a determination is basic. Nothing stands in the way of an adequate program of public construction that a determined electorate cannot remove.

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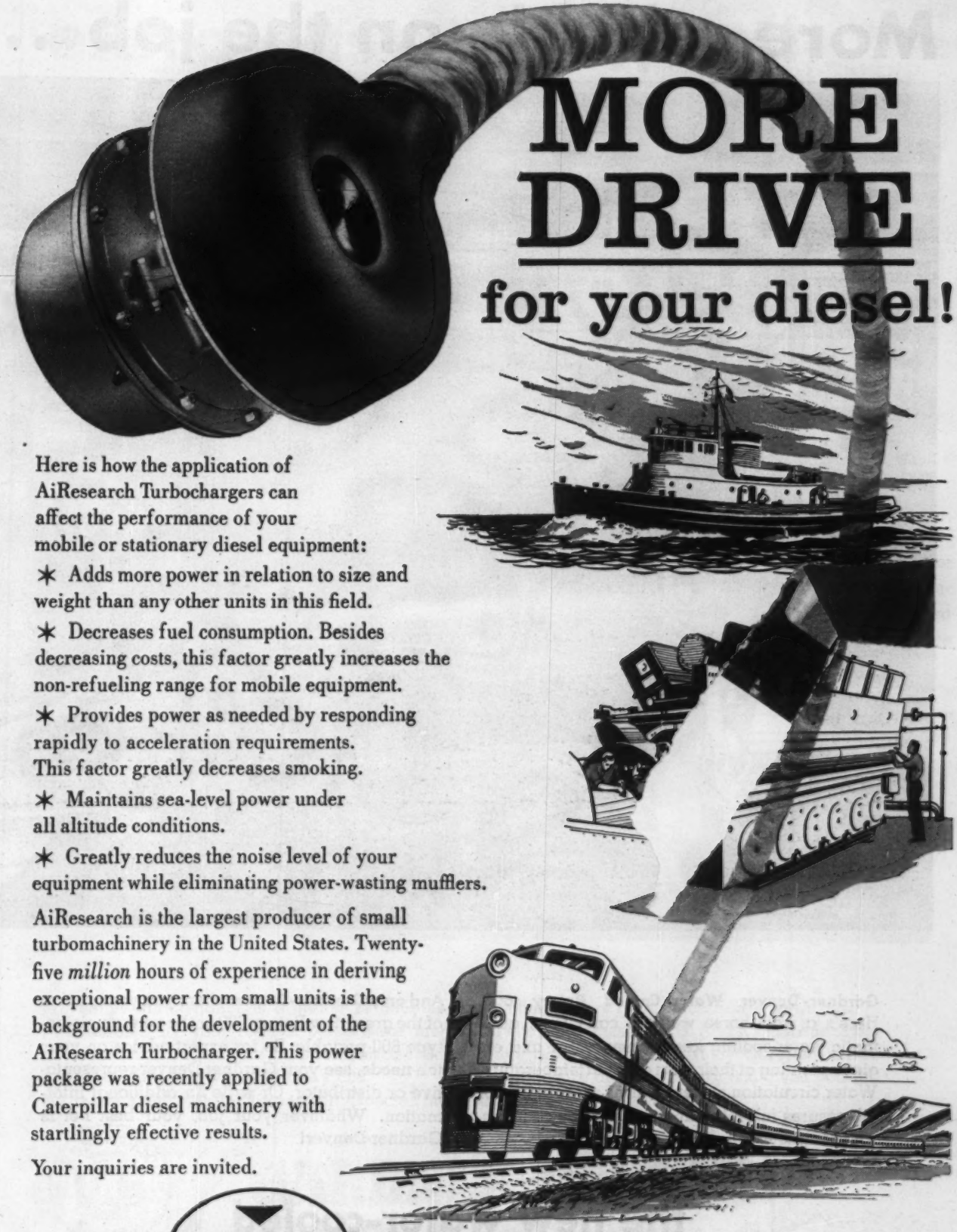

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✶ Provides power as needed by responding rapidly to acceleration requirements. This factor greatly decreases smoking.

✶ Maintains sea-level power under all altitude conditions.

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AiResearch is the largest producer of small turbomachinery in the United States. Twenty-five *million* hours of experience in deriving exceptional power from small units is the background for the development of the AiResearch Turbocharger. This power package was recently applied to Caterpillar diesel machinery with startlingly effective results.

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DESIGNERS AND MANUFACTURERS OF TURBOCHARGERS AND RELATED MACHINERY

ities, there is no such competitive incentive. To be sure, a city or state may lose population and industries if its public facilities are inadequate. But such shifts are very slow to take place and difficult to relate to any specific public program, or lack of it.

Moreover, the responsibility for constructing public facilities is divided between state and local governments and federal authorities. Within each of these governmental units there are specialized bureaus or departments with varying responsibilities. This division of responsibility obviously adds an element of difficulty to the development of an adequate program of public construction.

Breaking the Log-Jam

How can this administrative log-jam be broken and the financial difficulties overcome?

One course would be to have the federal government step in with a nation-wide new program of direct spending on public works. That would utilize the resources of the federal treasury for immediate action. But there are weighty objections to such extensive federal participation. One is that federal spending cannot be greatly enlarged without a corresponding increase in the federal control of decisions that normally have been left to local communities. Another objection is based on the fact that so long as we must maintain a large defense establishment, such an addition to federal spending means either higher taxes or a chronically unbalanced budget.

The other course is to rely primarily on local initiative, but with new and more effective federal aid to local governments. Such aid would help speed up planning and construction, and contribute toward a solution of the most burdensome financing problems, but in amounts sufficiently limited to require that most of the capital be raised locally.

No Single Formula

No one formula can be applied to make such aid effective. The raising of funds for new schools, for example, involves problems very different from those of financing highways, or water-works, or hospitals. But it does seem clear that, in all these fields, the federal grants must be designed to stimulate more local planning and financing than has prevailed in the past. Among the new ideas that may offer such incentives are federal grants for planning and initial costs and federal guarantees of local bond issues. Such aids have been remarkably effective in the fields of slum clearance and public housing.

While the federal government clearly has a role to play, we cannot afford to postpone inauguration of an adequate public construction program while we seek a formula to apportion governmental participation that would be generally accepted as ideal. Every year about 2½ million more Americans are putting increasing pressure on a public plant already dilapidated and inadequate. The result is an increasing menace to comfort, health, education and safety. It is also an increasing menace to the effective performance of American industry.

The appropriate public response to this situation is a driving public determination to eliminate this increasingly dangerous lag in public construction. At this juncture, the development of such a determination is basic. Nothing stands in the way of an adequate program of public construction that a determined electorate cannot remove.

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

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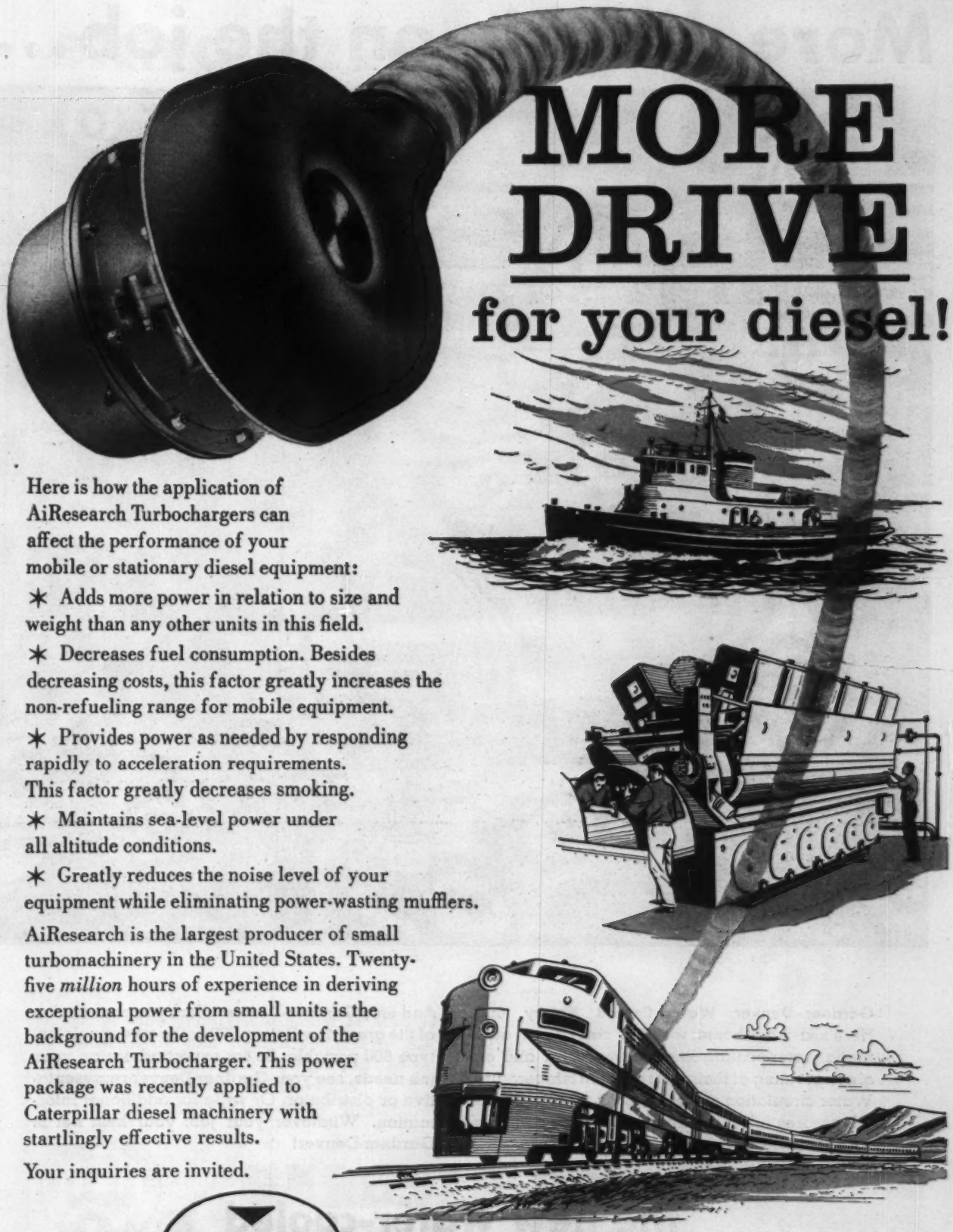

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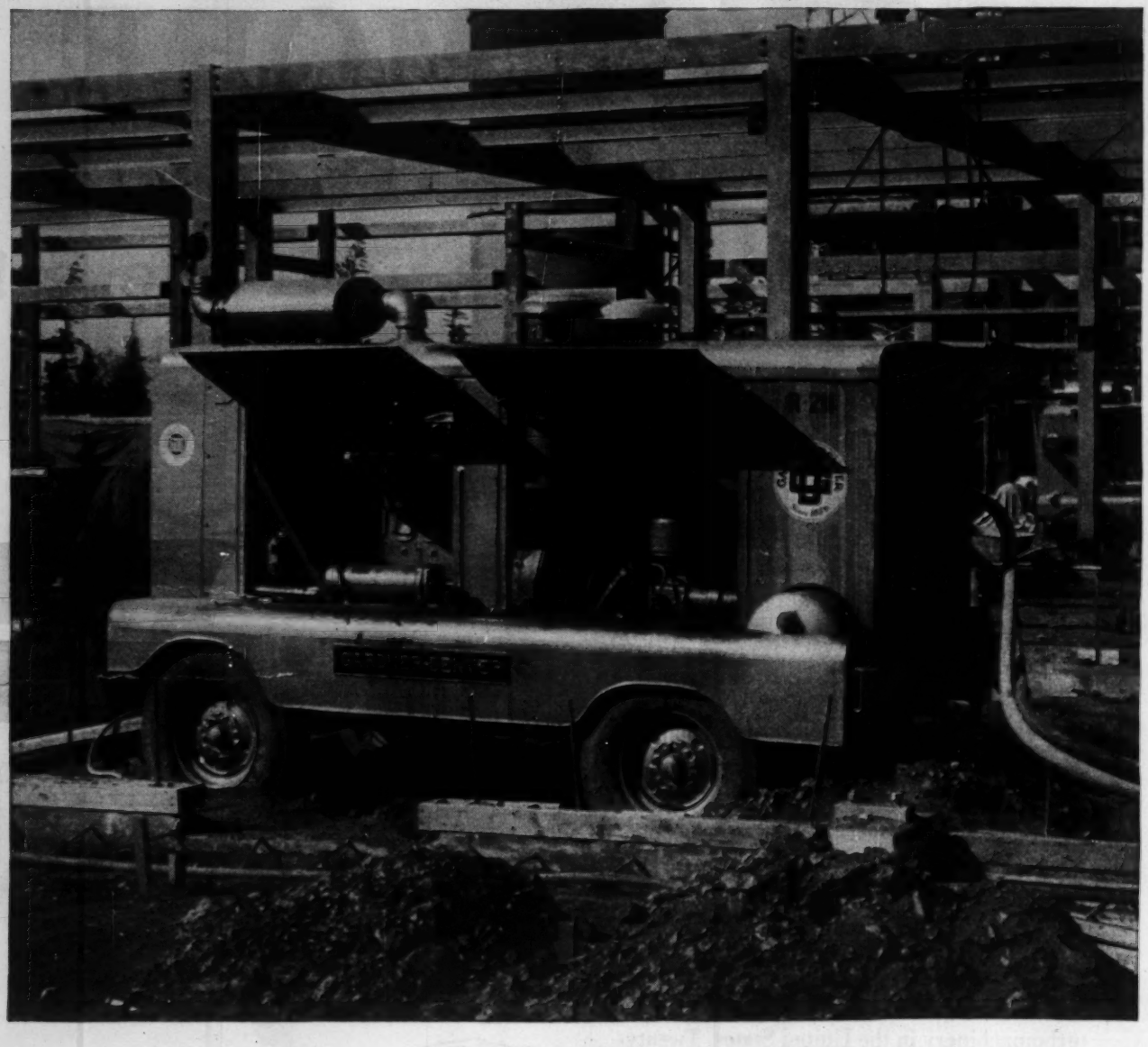

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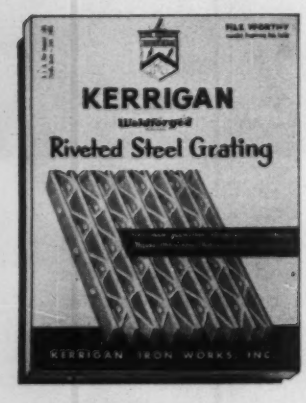

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OBITUARIES

Fred A. Pease, 81, founder of the Cleveland engineering firm that bears his name, died in Clearwater, Fla. July 3. For more than 50 years, he was a key figure in the development of Greater Cleveland, particularly the eastern suburbs. In 1903, the year he established the F. A. Pease Engineering Co., he laid out Fairmount Boulevard, believed to be the country's first divided highway. Mr. Pease, who retired in 1950, was a member of the American Society of Civil Engineers, and a founder of the Cleveland Society of Professional Engineers.

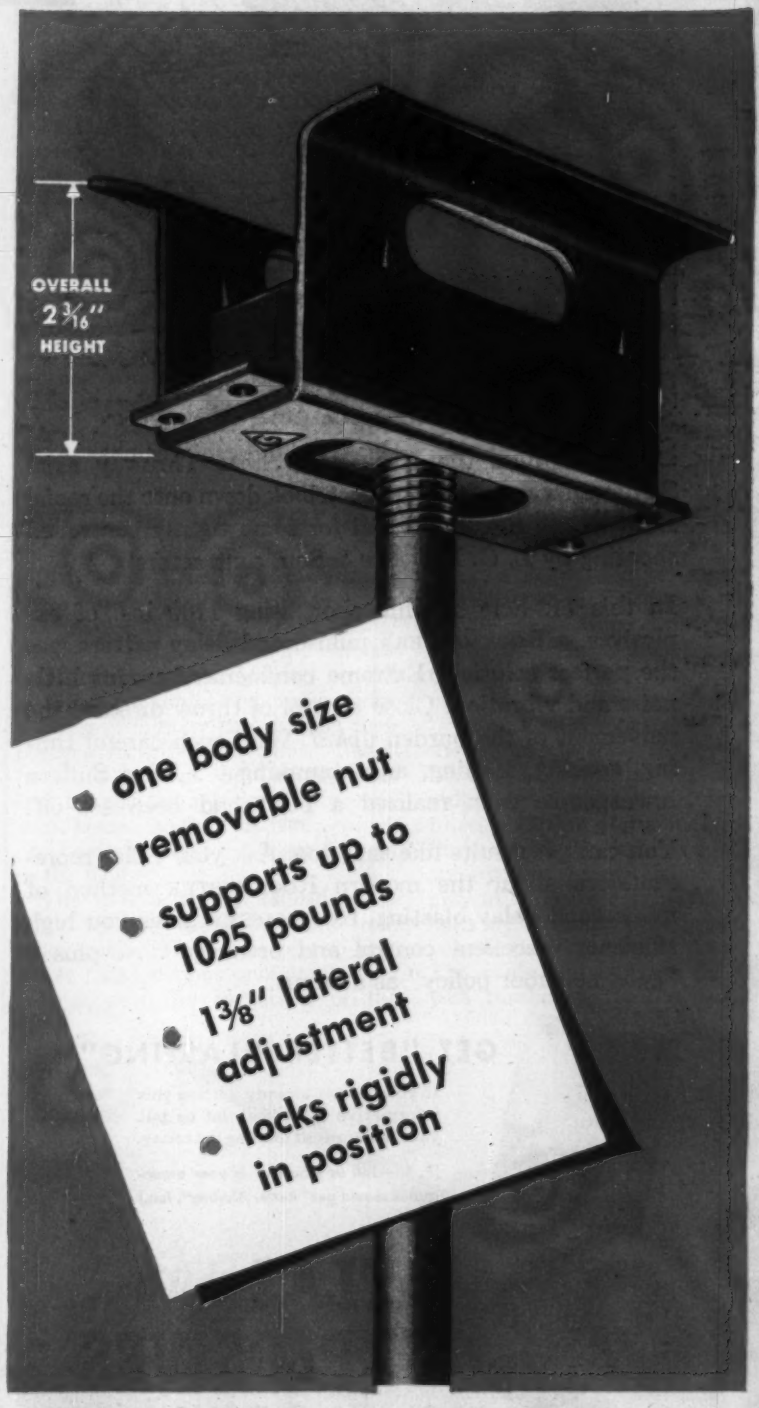
Edward R. Armstrong, 78, who became widely known in the 1930's for his experiments with floating airports, died in Philadelphia July 5. Although aviation development made the need for his ocean refueling stations less compelling, the Army transport Command tested and approved his designs during World War II. Mr. Armstrong was chief mechanical engineer for the DuPont Co. when he began his celebrated experiments. He later joined the Sun Shipbuilding & Drydock Co.

James Bentley, 84, who retired last year as president of A. Bentley & Sons Co., Toledo, Ohio, general contractors, died June 19. For 65 years he was active in the firm, which was founded by his father and which built several of Toledo's major buildings. From 1922 to 1927 he supervised construction of sugar mills in Cuba and the Dominican Republic, and also work in Brazil. He was a charter member of the AGC and of the Consulting Constructors Council of the U. S.

Robert M. Angas, 68, senior partner of Robert M. Angas & Associates, consulting engineers of Jacksonville, Fla., died late in June. A 1907 graduate of Georgia Institute of Technology, he worked on many engineering projects in Florida before forming his own firm. He served with the Army Engineers on construction projects in France during World War I, and later worked for the Navy on Florida installations.

James H. Bright, 65, a civil engineer employed by the Sacramento Region II, Bureau of Reclamation, died in Sacramento, Calif., June 17. Starting in 1944 he served as an engineer on the Delta-Mendota Canal, part of the Central Valley Project. His latest work was on Folsom Power Plant on the American River near Sacramento.

The new GRINNELL Wrought Steel CONCRETE INSERT



The newly designed Grinnell Wrought Steel Concrete Insert (fig. 280) is the economical answer to many overhead pipe suspension problems. It is made of heavy gauge steel and made to facilitate the use of various rod sizes. With but a single body size, manufacturing costs are reduced, ordering is easier, and installation simplified. This can mean a saving of time, trouble, and money for you.

The Grinnell Wrought Steel Concrete Insert is recessed to accommodate a special removable nut which is furnished with a ⅜, ½, ⅝ or ¾ inch tapping. Once the rod or bolt is screwed tight, the nut is rigidly locked in place. Before tightening, the rod position may be adjusted laterally as much as 1⅜ inches.

Thin-slab construction presents no problem. Overall height of insert, minus rod, is only 2 3/16 inches. The top edges are bent outward for solid anchoring. Slots in the sides will pass reinforcing rods up to ½ inch in diameter. With a load rating of 1025 pounds per unit (610 pounds for ⅜ inch rods), Grinnell's Wrought Steel Concrete Insert is rugged and inexpensive.

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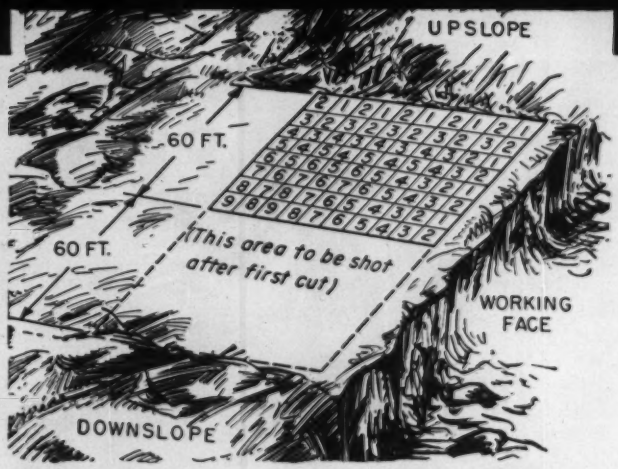
Blast at its height. No dangerous, wild flying boulders. Entire burden directed uphill. Residents have no complaints about this blast.



So CLOSE does the New York State Thruway skirt Suffern in some places, you can look down onto the roofs! Don't think this didn't call for some tightly controlled shooting by L. G. DeFelice & Son, contractors!

In this 112-hole side-hill shot using 1100 lbs. of explosives, a ROCKMASTER® millisecond delay pattern was the perfect solution. Extreme confinement meant little noise and vibration. Close control of throw directed the movement of the burden *uphill*. With such careful timing, spacing, loading, and stemming . . . few Suffern townspeople even realized a blast had been set off!

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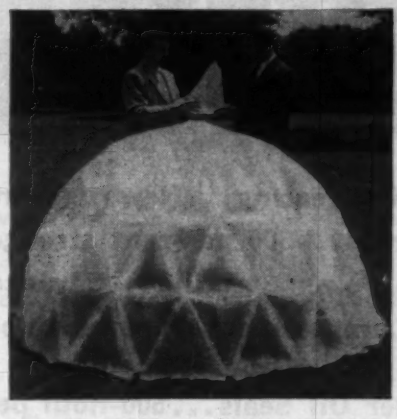
RESEARCH

Air "Bricks" Developed as Building Material of Future



Pneumatic bricks have been developed at the University of Illinois; the "bricks" are triangular plastic pillows. Air at low pressure keeps them firm and they can be built into almost any arch-shaped structure. Because of their extremely light weight, there is apparently almost no limit to the size of structure which might be built.

For commercial use, the units would be about 3 ft on a side and 4 in. through. Automatic valves between them would allow air to pass from one unit to another at more than 2 psi to quickly inflate the structure, but would shut off at less pressure so that a leaking unit would isolate itself.

Air space would provide insulation against cold, while radiant heat from the sun through the material would warm the inside. If desired, the units could be made of colored or opaque material or filled with smoke to reduce radiation. However, the amount of insulation and heat transmission are among items still to be determined.

Attachments for Army's Bridge Truck

Attachments for the Army's standard 5-ton bridge truck have been developed by the Corps of Engineers' Research and Development Laboratories, Fort Belvoir, Va., to provide a means of unloading heavy components of military bridges from their transporters without a crane. Slated for troop tests in the United States and Europe are a hydraulically operated boom, and an A-frame which can be attached to the front bumper in the field.

The 16-ft boom can unload equipment from its transporter and from other trucks. Consisting of two telescopic box sections mounted on a column near the backboard of the truck, it is operated by a man standing adjacent to the driver's seat. It can be extended, retracted, tilted and swung through an angle of 220 deg. Outriggers on each side behind the cab add lateral stability to the truck.

Fabricated of standard steel shapes, the A-frame is about 20 ft long in a horizontal position and is capable of unloading equipment from other trucks. Lifting power is supplied by the truck winch, and lockout blocks are required for the front spring to prevent excessive deflection. Two U-bolts are utilized on the backboard to provide tie-downs for the back cables. The angle of boom can be adjusted with turnbuckles in the back cables.

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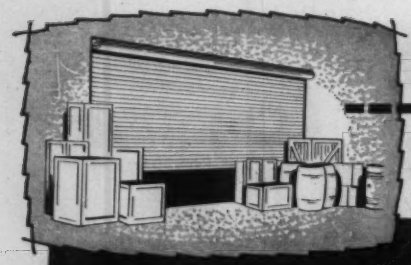

save space

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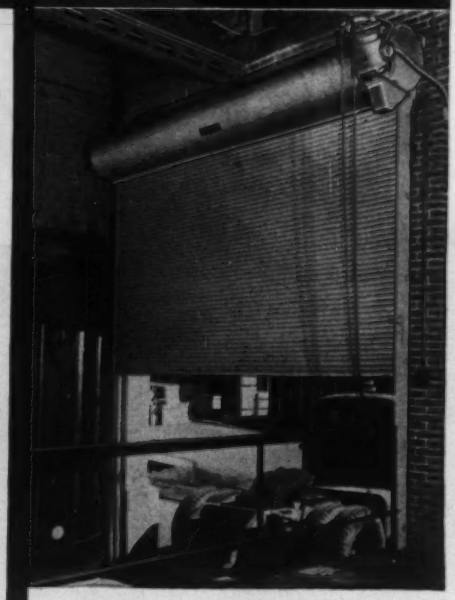
Kinnear Steel Rolling Doors



Opening straight upward, Kinnear Rolling Doors coil out of the way above the opening, into the compact hood mounted on the wall (or often within the wall, where desired).

They give you full use of all space around doorways at all times. *No extra space of any kind is needed for their opening action and closing action.*

The rugged interlocking steel-slat curtain *(originated by Kinnear)* also gives you added protection against fire, theft, vandalism, storms, and accidental damage.

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BOOKS

How to Lay Out a Plant

PRACTICAL PLANT LAYOUT—By Richard Muther. 363 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y., $12.

Not only does this book present basic principles as a guide to the laying out of facilities and equipment in an industrial plant but it also gives detailed procedures.

It is divided into four parts. Part I discusses the nature of plant-layout problems and describes usual types of layouts. Part II explains the effect on the layout of materials, machinery, personnel, routing and handling, need for storage, service requirements, building design and need for flexibility. Part III goes into detail on how to plan a layout. And Part IV answers such questions as when a new layout is needed and how management should oversee a layout project.

Of particular interest to architects and engineers is a chapter discussing the interrelationship of layout and the building. The author calls attention to the factors that affect such decisions as when to purchase a standardized industrial building, whether to build a one-story or a multistory structure, what shape the plant should have, whether the building should have a basement or a balcony, whether or not to have windows. His treatment of floors, roofs, ceilings and walls is very brief.

Timber Design

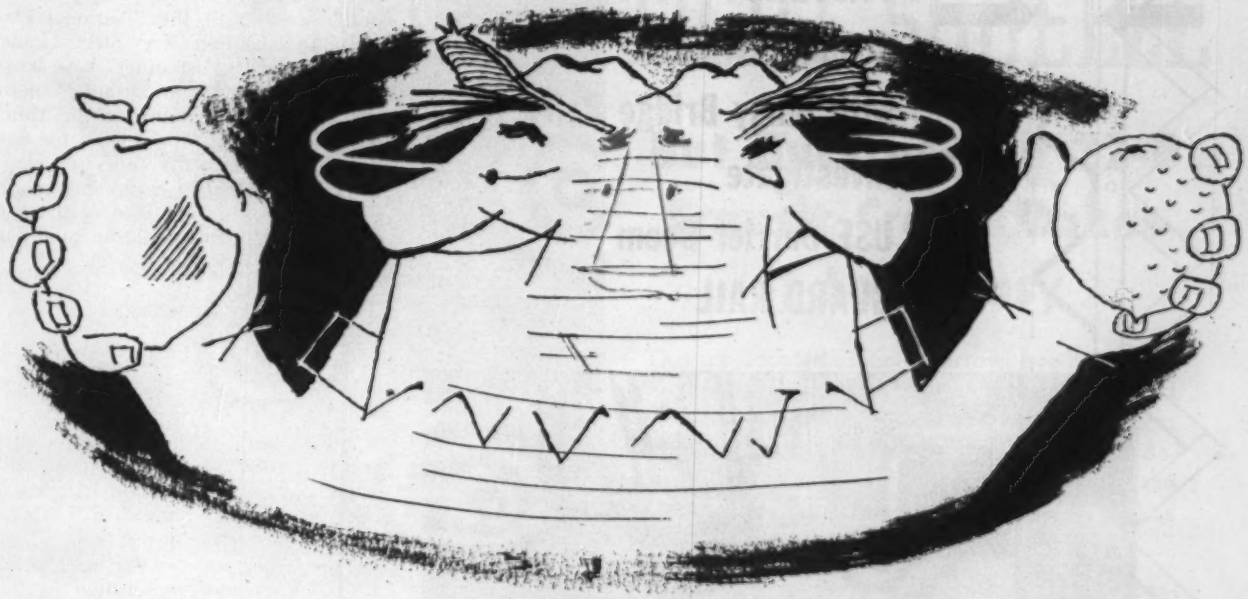
TYPICAL DESIGNS OF TIMBER STRUCTURES Third Edition. 123 pp. Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C. Limited free to architects, engineers and college professors.

Addition of 53 new designs brings the total number of typical designs of wood trusses presented in the new edition to 102. Also, 49 of the older designs have been revised. The typical designs are predominantly guides for proportioning pitched, bowstring, flat and Lank-Teco roof trusses.

Included are new series of segmental bowstring trusses, framed arches and a utility arch frame. The new bowstring trusses have laminated top chords, reflecting the development since the 1949 edition of recommended allowable working stresses for glued laminated lumber. The old laminating or "stitch" rivets have been eliminated in the new typical designs.

The revised designs take into account new technical data, as well as developments in engineering and con-

YOU CAN'T REPLACE A PEACH WITH A LEMON!



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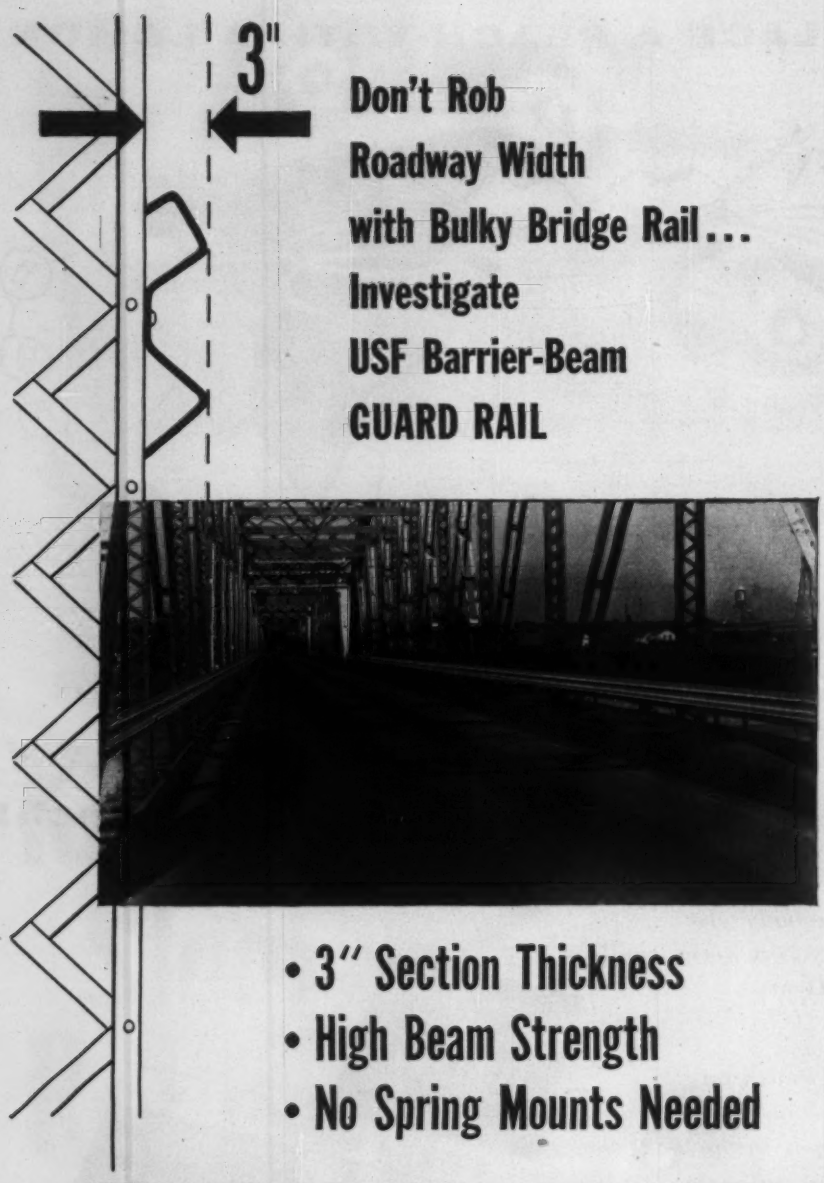

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struction techniques since the last edition. Since 1949, for example, the design criteria in the "National Design Specification for Stress-Grade Lumber and Its Fastenings" have been revised. Among the important changes influencing the designs in the third edition are revised provisions for net section requirements and development of a simplified design procedure for compression members, with provision for adjustment of the modulus of elasticity with duration of load.

Text on Prestressing

PRESTRESSED CONCRETE—Third Edition. By Gustave Magnel. 345 pp. McGraw-Hill Book Co., 330 W. 42nd St., New York 36, N. Y. $8.

Advances in prestressing techniques and newly developed test data warrant a new edition of this book, which was one of the first published on prestressed concrete construction.

Prestressing systems that have come to the fore since publication of the last edition (1950) have been added to the chapter on methods of prestressing. A section has been inserted to facilitate estimating the ultimate strength of simple beams. A discussion of the plastic theory for continuous beams and of the economy of continuity has been incorporated in the chapter on continuous prestressed beams. New test data on creep also have been added. And the chapter on applications has been extended with examples of recently constructed bridges and buildings.

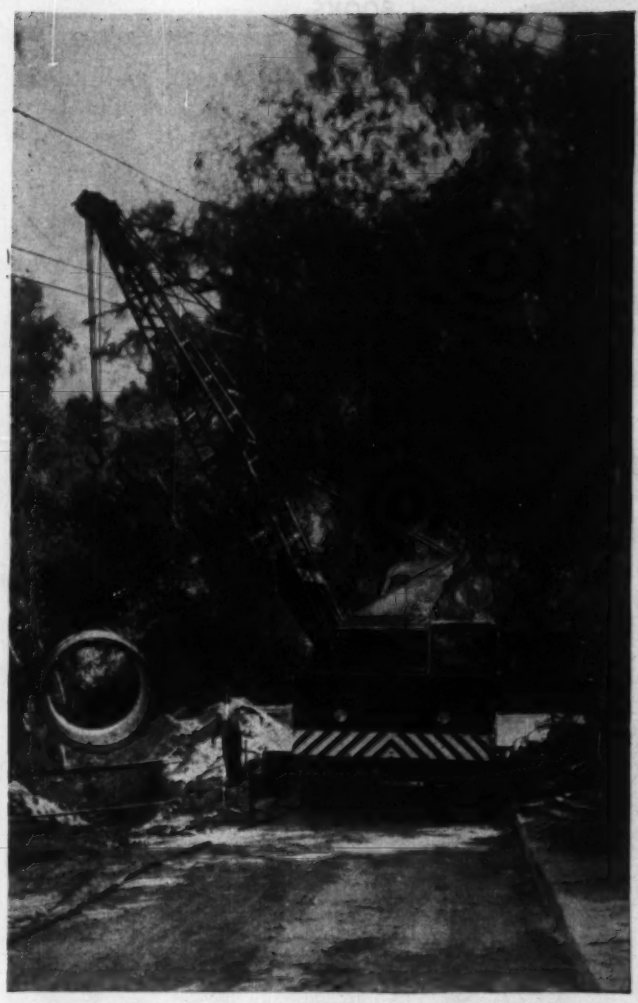
Indeterminate Structures

ANALYSIS OF STATICALLY INDETERMINATE STRUCTURES—By John I. Parcel and Robert B. Moorman. 571 pp. John Wiley & Sons, 440 Fourth Ave., New York 16, N. Y. $9.50.

First of two volumes on the theory of statically indeterminate structures, this book covers the basic theory of deflections and statically indeterminate stresses. The second volume, when published, will deal with the analysis of more complex structures.

The book seldom departs from classical methods of analysis; it presents the principle of virtual work, Castigliano's theorem, moment-area method, slope-deflection equations, theorem of three moments, moment distribution by successive approximations, elastic center method and the column analogy. For suspension bridges, the elastic and deflection theories are given.

However, there is included in the text a new method of moment distribution, in which sidesway takes place



Power controlled load lowering is one of the features the operator likes best about this 22-B. It helps him set pipe into position quickly and accurately. The job is part of a 10-year flood control project in Los Angeles county.

Boom folding mechanism (optional equipment at extra cost) permits crane booms 60 feet and longer to be folded with jib suspended underneath for moves between jobs.

TIGHT SQUEEZE

But Bucyrus-Erie 22-B Transit Crane Makes It Look Easy

This job, located along a narrow, tree-lined residential street in Pasadena, California, required the use of a compact clamshell-crane. A storm sewer trench had to be dug through tough decomposed granite and clay. Then, concrete pipe varying in diameter from 45 to 75 inches had to be installed.

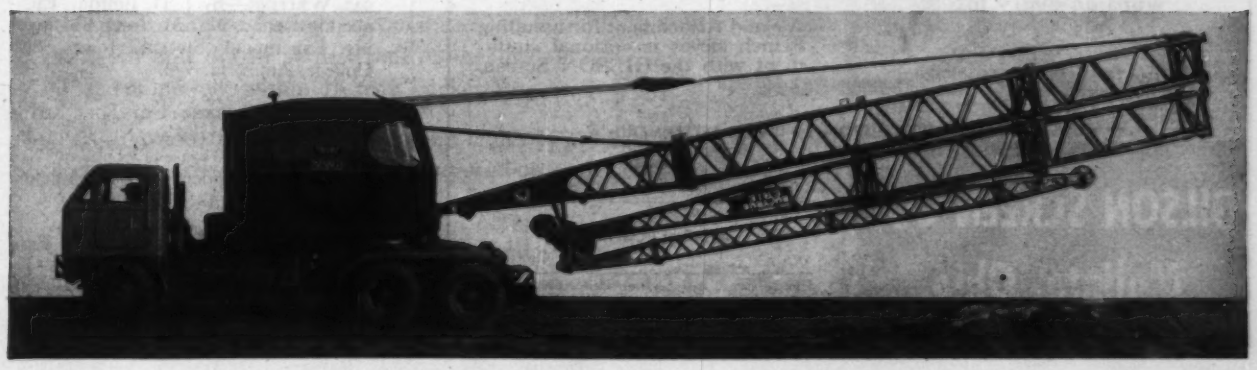
The contractor on the job made the best possible choice: he put a Bucyrus-Erie 22-B Transit Crane to work. Assignments like this are tailor-made for this machine. It's easy to move around with its rubber-tired carrier — can work in tight, narrow quarters. You can use it, as this contractor did, for both excavating and crane work—clamshell, orange peel, and dragline are all operated on the regular crane boom. Above all, it's dependable—a machine you can count on for steady high production every time it starts a job.

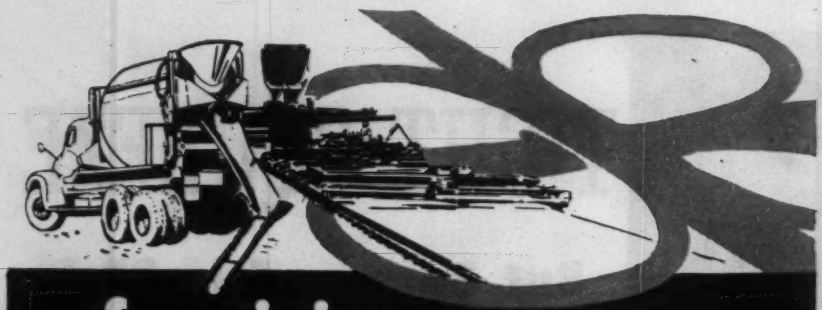
Bucyrus-Erie Transit Cranes are available in two sizes — the 15-ton Model 15-B, the 25-ton Model 22-B. Your nearby Bucyrus-Erie distributor can give you complete information.

106E55

BUCYRUS ERIE

South Milwaukee, Wisconsin





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The GILSON Mechanical Testing Screen provides an accurate check on sizing specifications for crushed stone, gravel, slag, coal, ores, and all similar materials.

RUGGED, FAST, AND ACCURATE

HANDLES UP TO ONE CU. FT. OF SAMPLE

MAKES TEST IN 5-MINUTES OR LESS

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Here's why GILSON belongs in your sizing specifications:

1. Makes tests quickly and accurately
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3. Screen trays independently removable
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6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

A Sand Attachment for handling 8-inch sieves is optional equipment with the GILSON Screen.

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GILSON SCREEN CO.
Malinta, Ohio

NAME

TITLE or POSITION

Please send me further descriptive and price information on the GILSON Mechanical Testing Screen.

BOOKS

automatically as joints are balanced. Also given is an extension of the slope-deflection equations to frames with curved members.

New Engineering Books

HANDBOOK OF DRAINAGE AND CONSTRUCTION PRODUCTS—579 pp. Armco Drainage & Metal Products, Inc., Middletown, Ohio. $5.00.

AIRBORNE CONTAGION AND AIR HYGIENE—By William Firth Wells. 423 pp. Harvard University Press, Cambridge, Mass. $6.00.

MECHANICAL AND ELECTRICAL EQUIPMENT FOR BUILDINGS—By Gay, Fawcett and McGuinness. Third Edition. 564 pp. John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y. $8.50.

EXPERIMENTAL MECHANICS AND PROPERTIES OF MATERIALS—By Carl W. Muhlenbruch. 243 pp. D. Van Nostrand Co., Inc., 250 Fourth Ave., New York 3, N. Y. $3.00.

EXPERIENCE IN URBAN REAL ESTATE INVESTMENT—By Leo Grebler. 277 pp. Columbia University Press, 2960 Broadway, New York 27, N. Y. $9.00.

Reports and Pamphlets

A GROWTH SURVEY OF THE ATOMIC INDUSTRY 1955-1965—Atomic Industrial Forum, Inc., 260 Madison Ave., New York 16, N. Y. $7.50.

THE BOMB, SURVIVAL AND YOU—Technical Supplement. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y. $2.50.

LATERAL STABILITY OF BRIDGE ARCHES BRACED WITH TRANSVERSE BARS—By Lars Ostlund. Transactions of the Royal Institute of Technology, Stockholm, Sweden.

HOUSING ALMANAC 1955—National Association of Home Builders, 1028 Connecticut Ave., Washington 6, D. C.

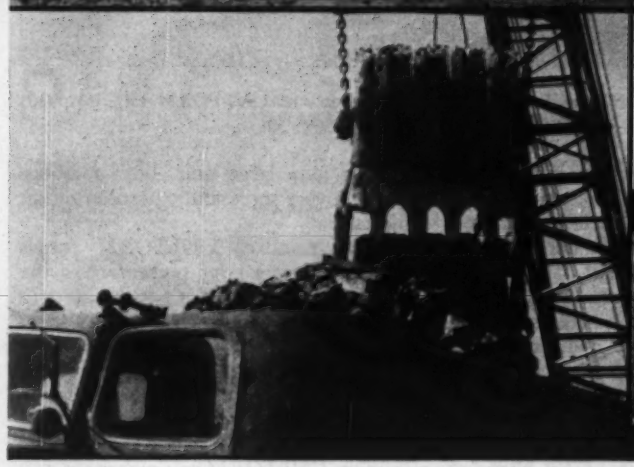
THE USE OF GOOD ENGLISH IN TECHNICAL WRITING—By J. H. Bolton. Engineering Report No. 24, Iowa Engineering Experiment Station, Iowa State College, Ames, Ia. 35¢.

PROGRESS AND FEASIBILITY OF TOLL ROADS AND THEIR RELATION TO THE FEDERAL-AID PROGRAM—House Document No. 139. Superintendent of Documents, Washington 25, D. C.

THERMODYNAMICS REFRESHER FOR PROFESSIONAL ENGINEERS LICENSE—By John D. Constance. Second Edition. John D. Constance, 625 Hudson Terrace, Cliffside Park, N. J. $3.25.

LOADING TRUCKS?

Here's How To Load 'em Quicker—



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Draglines equipped with Page Automatic Buckets will load your trucks faster—in fact, *will load 11 trucks in the time usually required to load 10.* A Page Automatic, in effect, adds another truck to your fleet or makes a 1¼ yd. machine out of a 1 yd. unit.

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Concrete Forms

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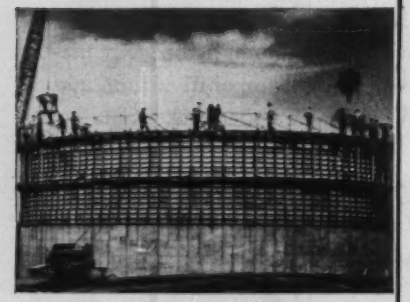

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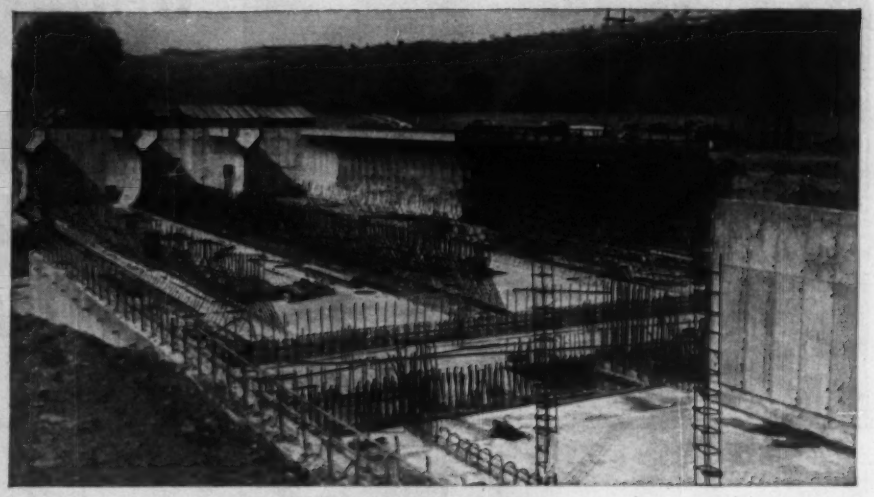
Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



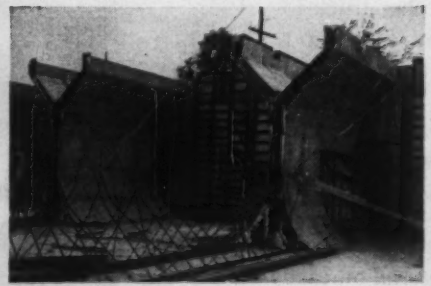
MECHANIZED FORMING with new "Y" wall trusses and UNI-FORM Panels speeds construction, saves labor and material

Field reports on a new system for forming "Y" walls in aeration tanks and settling basins indicate very satisfactory operation and important labor and material saving advantages for the system.

Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiroloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall forming system eliminate the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

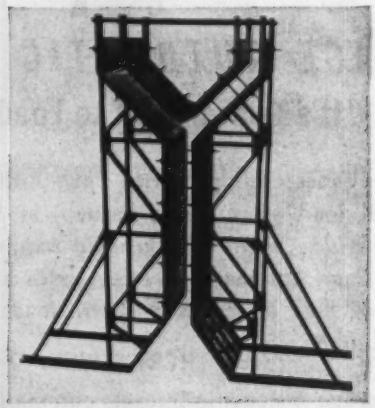


STRIPPED WALLS are clean and accurate

Erection, stripping and movement of the form can be handled either as individual pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

In this way, faster forming cycles, using minimum UNI-FORM equipment are possible, resulting in lower labor and material costs. UNI-FORM Panels are rented or sold, or rented with an option to purchase.



ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels

For complete details on Universal "Y" wall forms and UNI-FORM Panels, Write:

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1238 North Kostner Avenue
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NEW ENGLAND

HEAVY CONSTRUCTION—BA

Mass., Deerfield—BA 7/25—Town, Bd. Selectmen, Town Hall, sewage treatment facilities. $74,000. Plans deposit $5, refundable. Camp, Dresser & McKee, 6 Beacon St., Boston, engrs.

† N. H., Portsmouth—STORAGE FACILITIES—BA On Or About 7/26—U. S. Eng., 857 Commonwealth Ave., Boston 15, Mass., storage facilities for ordnance storage area, Portsmouth Air Force Base, ENG-19-016-56-6. Plans deposit $50. CD 10/27.

▲ Mass., Boston—BA 7/26—City, Dpt. P. Wks., City Hall Annex, reconstr. Charlestown Bridge (exclud. drawspan) over Charles River, Charlestown. $1,000,000. Plans deposit $10. CD 4/15.

BUILDINGS—BA

Conn., New Haven—GARAGE, etc.—BA 7/28—City, Richard C. Lee, mayor, City Hall, city garage maintenance & supply house and warehouse at Middletown Ave. and Fawn St. $750,000. Robert T. Collidge, 200 Blake Rd., Hamden, archt. CD 11/3.

Mass., Ipswich—SCHOOL—BA 7/29—Town, Russell Drelkorn, chn. Bldg. Comn., Ipswich, elementary school, Winthrop School site, Central St. $647,000. Plans deposit $50, refundable. Thomas Hixon Co., 1150 Commonwealth Ave., Boston, archt. Goldberg LeMessurier Assoc., 739 Boylston St., Boston, struct. engrs. CD 7/15/54.

Mass., Worcester—DORMITORY, etc.—BA 7/29—Assumption College, 670 Hamilton St., dormitory, dining hall, science hall, library, heating plant. $650,000. Plans deposit $200, refundable. Extended date. O. E. Nault & Sons, 48 Hamilton St., archts. Francis S. Harvey, 141 Dewey St., struct. engr. CD 7/1.

Mass., South Boston—TERMINAL GARAGE, etc.—BA 8/3—Albany Garage Corp., 210 Albany St., Boston, terminal garage and office, 923 E. First St. $200,000. Plans deposit $50. Golberg-LeMessurier Assoc., 739 Boylston St., Boston, engrs.

HEAVY CONSTRUCTION—LB & CA

NEW HAMPSHIRE and MAINE—The Maine-New Hampshire Interstate Bridge Auth., Southern End of Bridge, Portsmouth, N. H.

Morrison-Knudsen Co., Inc., 122 E. 42 St., New York, N. Y., and Landers & Griffin, Inc., 800 Islington St., Portsmouth, N. H., CA $548,244 (3 bidders) 3.6 mi. b. conc. resurf. and 0.6 mi. approach constr. for Interstate Bridge, Portsmouth, N. H. and Kittery, Me. Bids July 5, awarded July 6. CD 7/12, under LB.

VERMONT—State Hy. Dpt., State Office Bldg., Montpelier,

Vermont Paving Co., Inc., 4016 Williston Rd., South Burlington, Vt., LB $125,466, est. $140,000. maintenance Appl. 127/25-6/54 Hy. Work, U. S. Rte. 7, 11 sects Rutland, Pittsford and Brandon. Bids July 1. CD 6/23.

MASSACHUSETTS — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

J. A. Singarella Co., Bay St., Dorchester, Mass. LB $79,501, est. $78,000. bridge repairs Mt. Auburn St., Cambridge. Bids July 6. CD 6/22.

MASSACHUSETTS — Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Mass.—John P. Condon Corp., 105 Collidge Hill Rd., Watertown, Mass. LB $177,388, est. $126,000. hy. work Market, Central, Chelmsford St., Lowell;

Mass.—Ricardi & Sons Constr., Inc., 75 Ucatena Ave., Worcester, Mass. LB $191,502, est. $210,000. hy. reconstr. Worcester Turnpike Rte. 9, Northboro and Westboro;

Mass.—Daniel D'Onfro's Sons, 712 Main St., Leominster, Mass. LB $81,167, est. $81,000. hy. and bridge work off Hamilton St., Leominster. Bids July 6. CD 6/22.

▲ MASSACHUSETTS—Massachusetts Turnpike Auth., 80 Boylston St., Boston,

C. J. Langenfelder & Son, Inc., 8427 Pulaski Hy., Baltimore, Md. CA $8,746,884, est. $8,800,000. Contr. 51082 hy. and bridge constr., Milbury and Auburn. CD 6/23, under LB.

S. J. Virgilio Constr. Co., 440 Shrewsbury St., Worcester, Mass. LB $111,310, est. $110,000. 5,826 ft. Public St., Amesbury and Kalmar Sts., Hillcroft and Longmeadow Aves., WORCESTER, MASS. City, City Hall, Worcester, Mass. Bids July 7.

A. E. Bragger Constr. Co., Inc., Bragger St., Norwich, Conn., LB $47,581, est. $48,000, Group 23, water main extens., PROVIDENCE, R. I. City, City Hall, Providence, R. I. Bids July 5. CD 6/28.

Bd. Contract & Supply, Metropolitan Dist., 115 Broad St., Hartford, Conn., rejected bids June 23, sanitary sewers, Contrs. 55-11A and 55-11B, BLOOMFIELD, CONN. Will re-advertise.

▲ White Oak Excavators, Inc., 61 E. Main St., Plainville, Conn., LB $4,223,464. Contr. 288, Hogback Dam, HARTFORD, CONN. Bd. Contract & Supply, Metropolitan Dist., 115 Broad St., Hartford, Conn. Bids July 6. CD 5/27.

BUILDINGS—LB & CA

Samuel Aceto & Co., 40 Preble St., Portland, Me. LB $497,364, est. $460,000. Intermediate SCHOOL, Western Ave. opposite State Armory, AUGUSTA, ME. City, School Dpt., Augusta, Me. Bids July 7. CD 6/29.

Starr Bros., Inc., Pleasant St., Rockland, Me. CA Approx. $300,000. MANUFACTURING BLDG., ROCKLAND, ME. Owner, c/o Stevens & Saunders, archts., 187 Middle St., Portland, Me.

Endecon Corp., 163 Harvard St., Boston, Mass. CA Approx. $170,000. WAREHOUSE addn., Ashford St., BOSTON, MASS. Pittsburgh Plate Glass Co., 300 Babcock St., Boston, Mass. Bids June 29. CD 6/23.

Wasco Flashing Co., 87 Fawcett St., Cambridge, Mass. Separate Contracts. $180,000. FACTORY and WAREHOUSE, CAMBRIDGE, MASS. Goldberg-LeMessurier Assocs., 739 Boylston St., Boston, Mass., engrs. Schuler's Foods, Inc., 363 Highland Ave., Somerville, Mass., factory lessee. Columbia Cornice Co., 258 Elm St., Cambridge, Mass., warehouse lessee.

A. F. Smiley Constr. Co., 115 Trenton St., Pawtucket, R. I., CA $180,000. TRUCK TERMINAL, Harborside Industrial Park, Providence R. I. Harborside Industrial Park, 1 Washington Ave., Providence, R. I. Bids Apr. 29. CD 4/27.

† A. E. Minstein Constr. Co., 862 Willis Ave., Albertson, N. Y., LB $439,000. ADVANCED UNDERSEAS WEAPONS BLDG., Submarine Base, NOY 88659, Spec. 47582, NEW LONDON, CONN. P. Wks. Office, Federal Office Bldg., 90 Church St., New York 7, N. Y. Bids June 28. CD 6/16.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

N. Y., Poughkeepsie—BA 7/25—Aubrey B. Coons, comr. Finance, City Hall, approx. 16,425 lin. ft. 8 and 10 in. sanitary sewers, appurtenances, together with small sewage lift station, approx. 900 lin. ft. 4 in. c.i. force main, 360 lin. ft. 24 in. storm sewer in southwest section of city. Plans deposit $10. O'Brien & Gere, 400 E. Genesee St., Syracuse, Zone 2, consult. engrs.; adv. ENR 7/21. CD 11/29/45.

† N. Y., Plattsburgh—SHOP—BA 7/26—U. S. Eng., 111 E. 16 St., New York, Zone 3, base maintenance shop addn., Plattsburgh Air Force Base. CD 6/14.

PROJECTS COVERED

By Size

Construction projects here reported cover the Unite States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings, $344,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listings)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England	Middle West
Middle Atlantic	West of Mississippi
South	Far West
PROPOSED WORK	
Water Supply	Public Buildings
Sewers, Waste Disposal	Mass Housing
Bridges	Commercial Buildnigs
Streets & Roads	Industrial Buildnigs
Earthwork, Waterways	Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

N. Y., Oswego—FIRE ALARM SYSTEM—BA 7/28—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, fire alarm sys., main bldg., State University Teachers' College. Plans deposit $5. Extended date. CD 7/1.

N. Y., Garden City—BA 8/1—Bd. Water Comrs., District Office, Jericho Turnpike, wells and pumping unit; building; electrical work; water mains and appurtenances; fence; landscaping and grading. Plans deposit $20, Sidney B. Bowne & Son, 222 Front St., Mineola, engrs.

† N. Y., Fort Jay—FERRY SLIPS—BA On Or About 8/2—U. S. Eng., 111 E. 16 St., New York, Zone 13, 3 ferry slips, ENG-30-075-56-2. $725,000-$750,000.

▲ New York—BA 8/2—Power Authority of the State of New York, 270 Broadway, New York, Zone 7, Massena Intake near Massena, St. Lawrence County, New York, Spec. No. PA-5-11004, St. Lawrence Contr. No. 16. Plans deposit $25. Extended date. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 7/5.

† N. Y., Jackson Heights—SAND STORAGE BUNKER—BA 8/2—Office of Chief Engineer, Port of New York Auth., 111 Eighth Ave., New York, Zone 11, Contr. LGA-250.001, sand storage bunker at LaGuardia Airport. Plans deposit $30. CD 1/18/54.

N. Y., Ithaca—BA 8/4—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, exten., imprv. water supply sys., State College of Agriculture at Cornell University. Plans deposit $30.

New York—BOILER AUXILIARY EQUIPMENT—BA 8/12—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, Contr. P-122, furnishing, installing boiler auxiliary equip. for Kent Ave. Power Plant, Brooklyn Boro. Plans deposit $1.50. CD 9/6/45.

New York—POWER EQUIPMENT—BA 8/12—New York City Auth., 370 Jay St., Brooklyn, Zone 1, furnishing, installing power equip. for 74 Street Power Plant and 75 Street Sub-station, Contr. P-150, Contr. 1, addns. to existing power equip.; Contr. 2 main and auxiliary power equip., Contr. 3 addns. to sub-station control and annunciator boards, Manhattan Boro. Plans deposit $6.

Pa., Chester—BA 8/18—Clarence L. Conner, exec. mgr. Chester Municipal Auth., Authority Office, Fifth and Welsh Sts., Contr. No. 1 WW imprvs., Marcus Hook reinforcing mains, approx. 13,200 lin. ft. 20 in. cement-lined mechanical joint c.i. pipe, fittings, appurtenances or alternate installation of 20 in. prestressed concrete cylinder pipe in Blueball Ave. from 10 St. to Meeting House Rd. and in Meeting House Rd. from Blueball Ave. to Market St.; Contr. No. 2 WW imprvs. S. E. Chester reinforcing mains approx. 5,600 lin. ft. 18 in. cement-lined mechanical joint c.i. pipe fittings, appurtenances and approx. 3,600 lin. ft. owner-furnished 12 in. bell-and-spigot c.i. pipe, in Third St. from Morton to Hinkson Sts., thence in Hinkson St. to McDowell St., thence to Elsinore Place and in Eighth St. from Hinkson to Morton Sts., in 12 St. from Chestnut St. to Edgemont Ave. in 14 St. west of Melrose Ave. and in 14 St. from Upland St. to Edgemont Ave.; Contr. No. 3 Nether Providence pressure improvement program, 100,000 gal. elevated steel water storage tank or alternate reinstallation existing elevated tank, booster pumping station, approx. 2,600 lin. ft. of owner-furnished 12 in. bell and spigot c.i. pipe in Harvey Rd. from Chester to Willow Rds., thence in Willow Rd. to Blakeley Rd. in Media Parkway from Willow to Moore Rds., thence in Moore Rd. to elevated tank at Hastings Ave.; Contr. No. 4 structural work for filter plant extens.; Contr. No. 5 mechanical work for filter plant extens.; Contr. No. 6 electrical work for filter plant extens.; Contr. No. 7 heating and ventilating work for filter plant extens. Plans deposit $50 each. Albright & Friel, Inc., 121 S. Broad St., Phila., Zone 7, consult. engr.; adv. ENR 7/21.

BUILDINGS—BA

† N. J., Fort Dix—HOUSING—BA 7/25—Base Procurement Office, Mc Guire Air Force Base, Trenton, constr. five family housing units, Mc Guire Air Force Base, IFB 28-609-56-2. Plans deposit $25. CD 8/18/52.

N. Y., Ogdensburg—ROOFS—BA 7/28—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, replacement of roofs St. Lawrence State Hospital. Plans deposit $10. CD 3/16.

N. Y., Syracuse—BOILER HOUSE—BA 7/28—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, replacing steel stack, boiler house, laundry bldg., Syracuse State School. Plans deposit $5. CD 8/7/45.

N. Y., Hauppauge—SCHOOL—BA 7/29—Bd. Educ., Hauppauge Union Free School, Hauppauge, Suffolk Co., general constr., heating and ventilating work, plumbing work, electrical work for elementary school. Plans deposit $20, H. O. Fullerton, 152 Washington Ave., Albany, archt.

New York—MAINTENANCE—BA 8/4—Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, New York State Thruway Auth., section

Ask these clients about

GAHAGAN

GEOPHYSICAL SURVEYS

LOCATION	CLIENT
East River, New York City	Consolidated Edison Company
Shelton Well Field	Bridgeport Hydraulic Company
The Connecticut Expressway	Ammann & Whitney, Engineers
Casco Bay Power Project	Central Maine Power Company
Delaware River Power Project	Jackson & Moreland Co., Engineers
Southeast Expressway, Mass.	Massachusetts Dept. of Public Works
Narrows Bridge Site, Brooklyn & Staten Is., N. Y.	Ammann & Whitney, Engineers
125th Street Bridge Site, N. Y. C.	Ammann & Whitney, Engineers
Narragansett Bay	New England Power Service Company
Baker River (Wash.) Hydraulic Development	Stone & Webster, Engineers
St. Lawrence Power Project	Sanderson & Porter, Engineers
Massachusetts Turnpike	Howard-Needles-Tammen & Bergendoff, Engineers
Garden State Parkway, New Jersey	Goodkind & O'Dea, Engineers
The Connecticut Expressway	Loomis & Sullivan, Engineers
The Connecticut Expressway	Knappen-Tippetts-Abbett-McCarthy, Engineers
Portland, Pa. Power Plant	Metropolitan Edison Company

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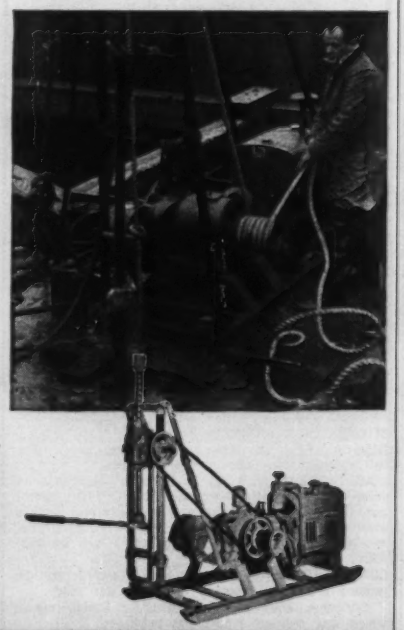

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The Acker Model SK rotary drill head when combined with Acker RGT and RG rigs make an ideal unit for rock coring and foundation test boring. For complete information, write today for bulletin *28-ENR.*

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A complete line of Soil Sampling Tools, Diamond and Shot Core Drills, Drilling Accessories and Equipment.

maintenance bldg. at Kingston and section maintenance bldg. at Catskill. Plans deposit $30.

▲ D. C., Wash.—DORMITORY—BA 8/10—Georgetown University, 37th and O Sts. N. W., nurses dormitory. $1,350,000. Plans deposit $50. Leon Chatelain, 1727 "K" St. N. W., archt. CD 8/12/53.

▲ N. J., Bayville—HIGH SCHOOL—BA 8/12—Central Regional High School, Bayville, Junior-Senior High School, at Pinewald. $1,430,000. Micklewright & Mountford, 72 Ewing St., Trenton, archts. CD 3/9.

HEAVY CONSTRUCTION—LB & CA

Maloy, Dugan & Maloy, Inc., 58 Dott Ave., Albany, N. Y. LB $114,624. (7 bidders) sewage treatment plant at gas station and restaurant at Coxsackie, Greene Co., New York State Thruway Auth., NEW YORK. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids July 7. CD 6/17.

Giles Drilling Corp., 2 Park Ave., New York 16, N. Y. LB $44,860. (1 bidder) soil explorations and foundation investigations at various sites on Bruckner Blvd. Sect. 1 from Major Deegan Expressway and Triborough Bridge to Bronx River Expressway, city of New York, Bronx Co., Contr. Spec. SM-77, NEW YORK. Bureau Contracts & Accounts, The Gov. Alfred E. Smith State Office Bldg., Albany, N. Y. Bids July 7. CD 6/17.

† **D. W. Winkelman Co.**, Heffernan Bldg., Syracuse, N. Y. LB $299,474. (3 bidders) constr. first portion of east-west highway leading to new international crossing at Pollys Gut in connection with St. Lawrence Seaway Proj., NEW YORK. U. S. Eng., Niagara and Bridge Sts., Buffalo 7, N. Y. Bids July 7. CD 6/28.

▲ **Horn Constr. Co., Inc.**, 2174 Hewlett Ave., Merrick, N. Y. LB $2,071,250. (3 bidders). rehabilitation timber deck, tracks, contact rail, Liberty Ave. Line incl. tracks for connection to Rockaway Line, Queens Boro, Contr. T-118, NEW YORK, New York City Transit Auth., 370 Jay St., Brooklyn, 1, N. Y. Bids July 6. CD 6/27;
Tully & Dinapoli, 127-50 Northern Blvd., Corona, N. Y. LB $1,547,565. (3 bidders). rehabilitation of tracks contact rail and incidental work from Linden Blvd. to Hamilton Beach Rockaway Line, Boro of Queens, Contr. T-119, (New York).

▲† **Spearin, Preston & Burrows, Inc.**, 50 Church St., New York 7, N. Y. CA $1,163,960. Schedule 1 rehabilitation of Piers 1A, 1, 2, 3 and 4, Brooklyn Army Base, Terminal, BROOKLYN, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. CD 6/27, under LB.

▲† **Industrial Engineering Co.**, 50 Church St., New York 7, N. Y. CA $1,565,071. hangar and crash house Naval Air Station, NOY 70362, Spec. 31949, NIAGARA FALLS, N. Y. P. Wks. Office, Third Naval Dist., Federal Office Bldg., 90 Church St., New York 7, N. Y. CD 5/23, under LB.

James Mitchell, Inc., 75 Montgomery St., Jersey City, N. J. LB $369,049. vehicular parking area in vicinity of intersection of New Jersey Rte. 3 and approaches to Lincoln Tunnel located in Bergen Co., N. J., Contr. LT-190-001, NEW JERSEY. Port of New York Auth., 111 8th Ave., New York 11, N. Y. Bids July 6. CD 6/14.

Hill Dredging Co., 921 N. Missouri Ave., Atlantic City, N. J., LB $58,306, dredging Inland Waterway, Proj. 456 and 457, Ocean Co., NEW JERSEY. Dpt. Conservation & Economic Development, Div. Planning & Development, 1060 Broad St., Newark, N. J. Bids July 8. CD 7/6, under LB.

PENNSYLVANIA—Commonwealth of Pa., Dpt. Hys., Harrisburg,
Irvine N. Loomis & Sons, Montrose Pa. CA $556,674 wid'n., drainage existing pavement, crushed aggregate base, bit. surf. width 22 ft. exten. 2 existing rein. bridges, Kiddery-Tobyhanna Twps., contr. traffic Rte. 940 between East Side Borough and Blakeslee Corners, Carbon and Monroe Counties. CD 6/29, under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,
Bethlehem Steel Co., E. 3 St., Bethlehem, Pa. CA $1,539,262. combined bid for superstructures of Hawk Falls Bridge (Sec. 27-AB) and Lehigh River Bridge (Sec. 37-DE), Carbon and Luzerne Counties. CD 7/1, under LB.

Park Barner Co., Mill Hall, Pa. CA $98,725. sewer lines, AVIS, PA. Avis Borough, M. S. Irvin, pres., Avis, Pa. CD 7/31/47.

Paul E. Barry, Inc., 225 S. Front St., Richland, Pa. LB $99,800. water supply and distr. lines, at Kutztown State Teachers' College, KUTZTOWN, PA. General State Auth., 18 and Herr Sts., Harrisburg, Pa. Bids July 6, CD 6/9;
Pittsburgh-Des Moines Steel Co., 1060 Broad St., Newark, N. J. LB $52,290. elevated steel water tank, (Kutztown, Pa.);
Corbit's Inc., 225 S. Front St., Reading, Pa. LB $54,000. plumbing, (Kutztown, Pa.).

Schrader & Seyfried, Inc., 109 Vineyard St., Bethlehem, Pa. CA $445,053. sanitary sewerage sys., appurtenances, NORTHAMPTON, PA. Northampton Borough Municipal Auth., Dpt. Water, 1717 Main St., Northampton, Pa., CD 1/25/45;
Vanguard Constr. Corp., 369 Lexington Ave., New York, N. Y. CA $261,728. sewage treatment plant and pumping stations addns. (Northampton, Pa.).

MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
American Asphalt Products Co., 60 P St. S. E., Wash., D. C. CA $814,920. combined bid surfacing 12.289 mi., U. S. Rte. 40, contr. C1 308-7-715, F 537-17-715, F 537-18-715, Carroll and Frederick Counties. CD 6/28, under LB.

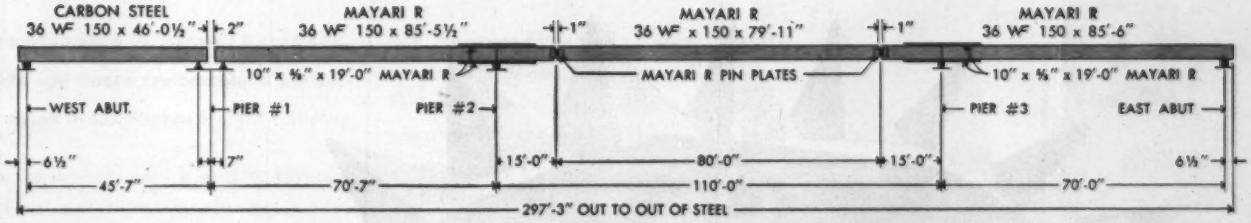
▲ **MARYLAND**—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Williams Constr. Co., Inc., Middle River, Md. CA $2,758,549. grading, drainage, surf. 3.55 mi. Kenil-

continued on page 130

Mayari R makes it lighter... stronger... longer lasting

Wheelock Parkway bridge was designed to standard specifications of the American Association of State Highway Officials, for the city of St. Paul, under direction of George M. Shepard, *Chief Engineer*, and M. W. Hewett, *Bridge Engineer*.

New St. Paul Overpass Rests On Lightweight Beams of Mayari R



This modern bridge carries Wheelock Parkway over a stream gully and the Soo Line railroad tracks in St. Paul, Minn. Opened to traffic last fall, it was jointly financed by the Minneapolis, St. Paul and Sault Ste. Marie Railroad and the city of St. Paul.

As the sketch shows, the bridge consists of one simple span at the west end, plus two cantilever spans and a simple span supported by the cantilever arms. Total length is 297 ft 3 in. out to out of steel. The simple span at the end employs carbon-steel beams, while the remaining spans are of 36-in. wide-flange beams, weighing 150 lb per ft and made of Mayari R low-alloy, high-strength steel.

The use of Mayari R reduced the deadweight and permitted longer spans, using the same size beam as in the carbon-steel span. Mayari R cover plates were welded to both flanges of the beams at points of maximum moment over the piers to the 110-ft span.

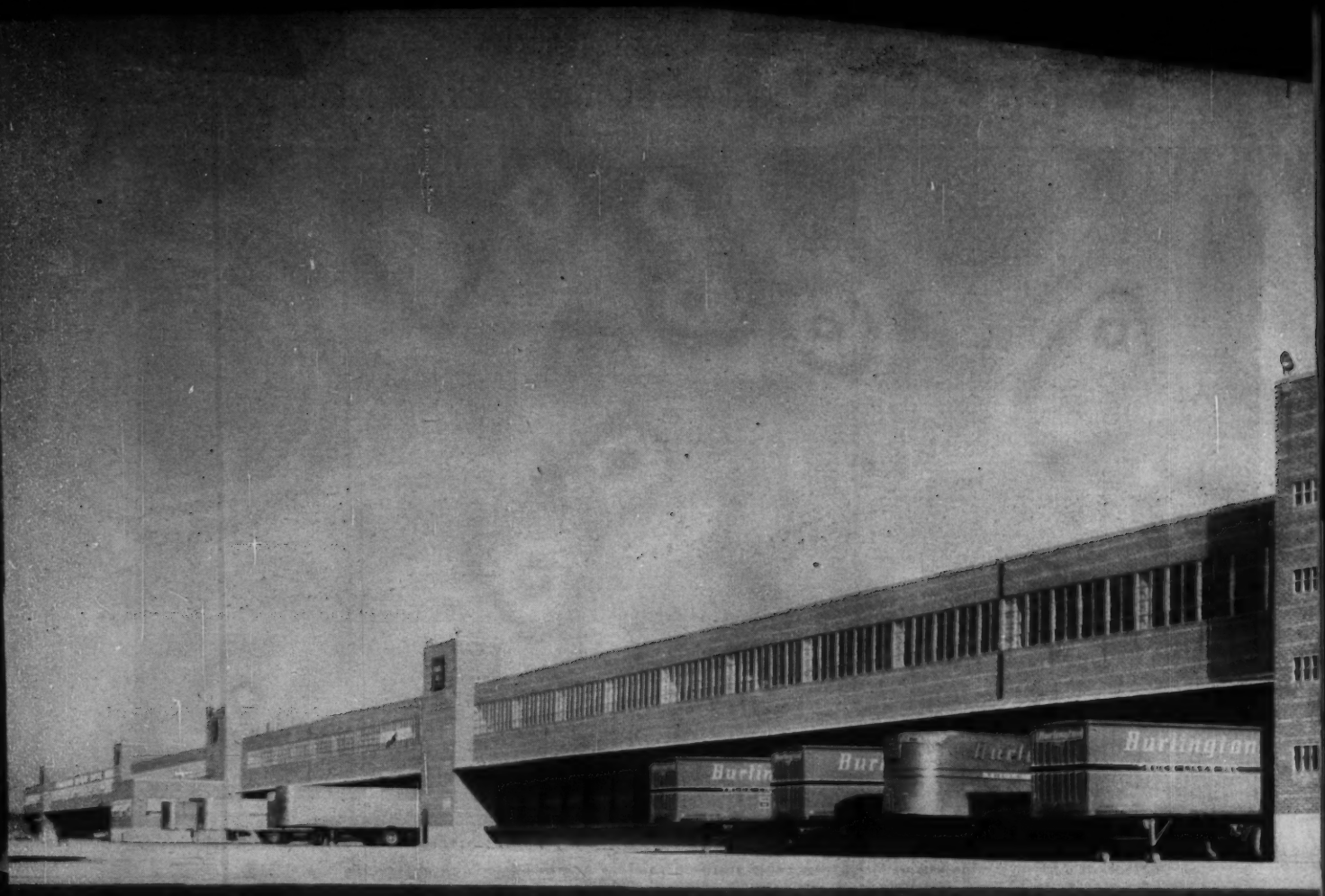
St. Paul Structural Steel Company, fabricators of the bridge, were enthusiastic about the welding and working qualities of Mayari R. They were able to camber the heavy sections in their own shops without difficulty.

Fabricators and structural men are selecting versatile, weight-saving Mayari R for a widening variety of applications. Dozens of these uses are illustrated and described in our Catalog 353. You can get a copy through the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

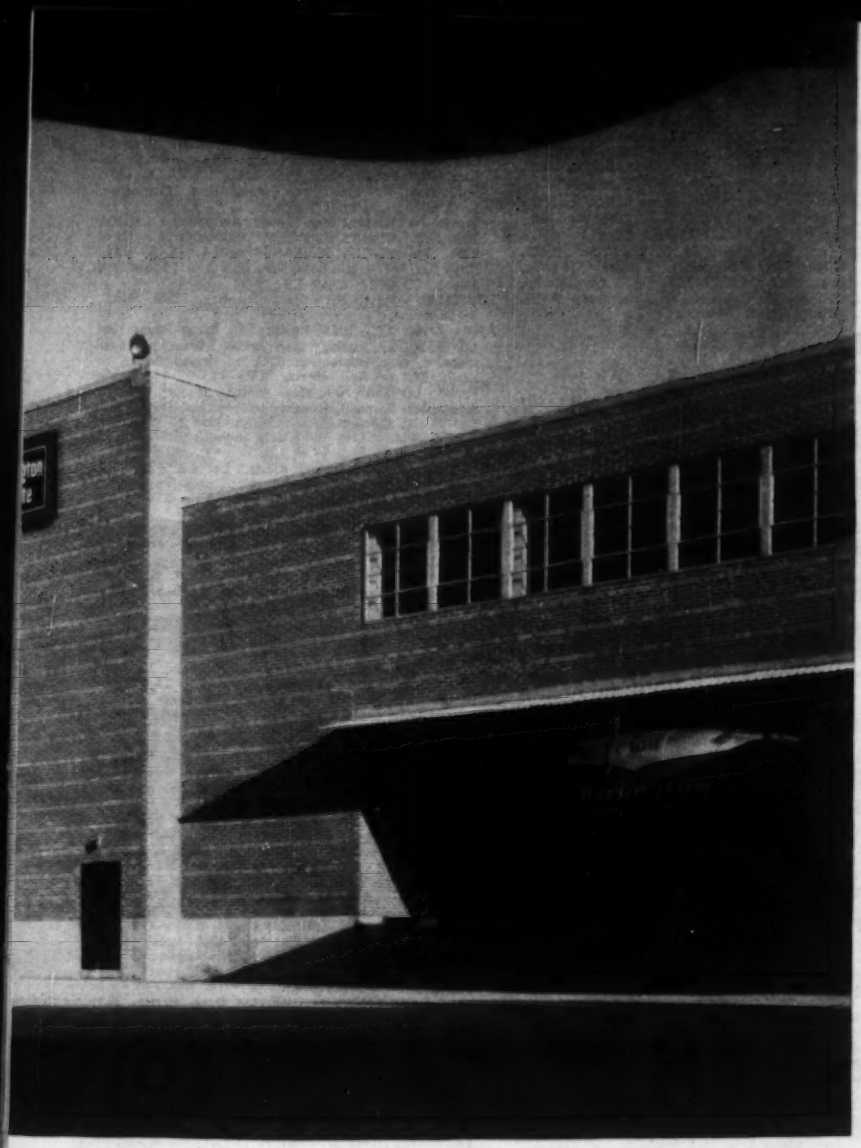
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



One of the longest buildings with continuous windows in the U. S. A. — the Burlington Freight Terminal. Ceco-Sterling Aluminum Windows were used throughout. Architects and Engineers: Shaw, Metz & Dolio / Contractor: E. H. Marhoefer

How borrowed daylight illuminates a giant freight terminal



CECO STEEL

Ceco-Sterling Aluminum Projected Windows provide a modern office feeling with abundant natural daylighting.

This illustrates the way office areas were partitioned with Ceco Steel Borrowed-Lights, thus introducing natural daylight into central areas.

Ceco standard Windows, Borrowed-Lights and Doors are combined for better vision in Burlington freight building

Bringing daylight into a building through windows and then introducing it into central areas through glazed doors and borrowed-lights is smart basic planning . . . especially when it is done with Ceco *standardized* engineered products. And that's what Shaw, Metz & Dolio did when they designed the Burlington Route's new giant freight terminal in Cicero, Illinois. Maximum light is brought inside through a ribbon of Ceco Aluminum Projected Windows — large glass lights — easy to clean — no maintenance problems. Inside, the daylight is borrowed for corridors and central areas through glazed Hollow-Metal Doors, Transom Frames and Borrowed-Lights, all Ceco-engineered for *economical unit installation*, all factory fabricated for *low first cost*. Ceco Engineers went a step further. They proved Ceco Standardized Door Hardware eliminates extra labor costs — ready for installation when delivered — no on-the-job fitting. Ceco also supplied Concrete Reinforcing Bars and Welded Wire Fabric, delivered to meet the contractor's schedule. Through working with Ceco, better coordination of effort was achieved — time was saved. On your next job call Ceco Engineers. Chances are they can save you time and money . . . help you realize better building.

Ceco Hollow-Metal Doors are used throughout the building, in borrowed-light partitions and in separate openings, as shown in these two pictures.

CECO STEEL PRODUCTS CORPORATION

Offices, warehouses and fabricating plants in principal cities.

General Offices: 5601 W. 26th St. Chicago 50, Ill.

IN CONSTRUCTION PRODUCTS CECO ENGINEERING MAKES THE BIG DIFFERENCE

continued from page 126

worth Interchange Area, incl. 3 steel beam bridges, concrete box culvert, near D. C. Line, Contr. P-724-10-320, Prince Georges Co. CD 6/30, under LB.

▲ **C. J. Langenfelder & Sons, Inc.**, 8427 Pulaski Hy., Baltimore 21, Md. CA $2,206,324. Fairfield Land Section Patapsco Tunnel Proj., Contr. PT-110, MARYLAND. State Rds. Comn., 108 E. Lexington St., Baltimore 2, Md. CD 6/21, under LB.

† **Gunnell Constr. Co.**, Tower Bldg., Wash., D. C. CA $836,000, est. $1,000,000-$3,000,000. (12 bidders) hangar, shops, boiler house, ENG-49-080-55-80-(71), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N. W., Wash. 25, D. C. Bids June 21, awarded July 5. CD 6/27.

Donaldson Paving Co., Inc., 20 Potomac Ave., S. W. Wash., D. C. CA $557,671, (4 bidders) repair asphaltic pavements and c. conc. bases at various locations, WASH., D. C. D. C. Govt., Dpt. Highways, 499 Pa. Ave. N. W., Wash., D. C. Bids June 3, awarded June 22, CD 6/10, under LB.

DELAWARE—State Hy. Dpt., Dover Highway Administration Bldg., Dover,

Del.—**Waco Contg. Co.**, 5013 Belaire Rd., Baltimore, Md., LB $124,192, surf. tr. 168 mi. New Castle Co.;

Del.—**Delmarva Asphalt Co.**, West Seaford, Del. LB $241,518, resurf. 192 mi. roads, Sussex Co.;

Del.—**Wilson Contg. Co., Inc.**, duPont Blvd. and State Rd., New Castle, Del. LB $263,460, imprv. 1.921 mi. Gap Rd. from intersection with Rte. 48 to Emily P. Bissell Sanitarium, New Castle Co. Bids July 6. CD 6/13.

BUILDINGS—LB & CA

Bellhaven Estates, c/o Butterly & Green, Inc., 168-25 Hillside Ave., Jamaica, N. Y. Owner Builds. $700,000. 100 HOUSES on tract at Provost St. and Montauk Hy., BELLPORT, N. Y.

▲ **Sycamor Woods Homes**, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y. Owner Builds. $1,000,000. 70 HOUSES on tract on Vernon Valley Rd. south of Northern Blvd., EAST NORTHPORT, N. Y.

▲ **Turner Constr. Co.**, 420 Lexington Ave., New York 17, N. Y. CA Est. $2,000,000. 2 story, 135,000 sq. ft. DEPARTMENT STORE, GARDEN CITY, N. Y. Lord & Taylor Fifth Ave. and 38 St., New York 1, N. Y. Bids June 9. CD 6/6.

▲ **Psaty & Fuhrman, Inc.**, 369 Lexington Ave., New York 17, N. Y. CA $3,153,000. general constr. new GENERAL CARE HOSPITAL BLDG. at Harlem Hospital, Manhattan Boro, NEW YORK, N. Y. Dpt. P. Wks., Municipal Bldg., New York 7, N. Y. CD 5/9, under LB.

▲ **Sokolov Bros. & Sons**, 364 Conklin St., Farmingdale, N. Y. CA $5,000,000. 700 HOUSES on tract of 150 acres on North Ocean Ave. adjoining Canaan Lake, PATCHOGUE, N. Y.

▲† **Tandy & Allen Constr. Co., Inc.**, 280 Hackensack Ave., Hackensack, N. J. CA $7,607,392. (7 bidders) STORAGE FACILITIES at Seneca Ordnance Depot, ROMULUS, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y.

Fairway Estates, c/o Long Island Homes, 168-12 Hillside Ave., Jamaica 32, N. Y. Owner Bulids. $670,000. 16 HOUSES on tract at Bryant Ave. and Motts Cove Rd., ROSLYN HARBOR, N. Y.

▲ **Briar Point in Sayville Homes**, c/o Stanley J. Shaftel, archt., 89-47 163 St., Jamaica, N. Y. Owner Builds. $8,500,000. 712 HOUSES, on 250 acre tract west of Broadway, SAYVILLE, N. Y.

▲ **Simpson Constr. Co.**, Toms River, N. J. LB $1,079,000 general contract New Brunswick SERVICE BLDGS. In Areas 6N and 6S, Mercer Co., NEW JERSEY, New Jersey Turnpike, Auth., Administration Bldg., New Brunswick, N. J. Bids June 7, CD 5/25.

Robert E. Lamb & Son, 3429 W. Indiana Ave., Phila., Pa., CA $150,000. INDUSTRIAL BLDG. No. 40, CAMDEN, N. J. Campbell Soup Co., 100 Market St., Camden, N. J. Bids June 28. CD 6/29.

Gregory Homes, Inc., 17 Gregory Dr., Hamilton Square, N. J. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Quakerbridge Rd., HAMILTON SQUARE, N. J.

▲ **Parkway Manor Homes**, c/o Roche & Roche, archts., 234 W. 44 St., New York 36, N. Y. Owner Builds. $1,700,000. 112 HOUSES on tract on McLean Place near Rte. 22, HILLSIDE, N. J.

Wortman Constr. Co., 1140 E. Jersey St., Elizabeth, N. H. CA $883,866. (9 bidders) Junior-Senior High SCHOOL, Brooks Blvd. between N. 10 Ave. and N. 13 Ave., MANVILLE, N. J. Bd. Educ., Main St. School, 225 S. Main St., Manville, N. J. Bids May 24. CD 4/29.

Winson Wood Estates, c/o Walter H. Kremer, 13-00 Plaza Rd., Fairlawn, N. J. Owner Builds. $480,000. 15 HOUSES on tract on Woodcliff Ave. east of Werimus Rd., WOODCLIFF LAKE, N. J.

▲ **Engineers & Builders, Inc.**, 1420 Walnut St., Phila. Pa. Separate Contracts. $2,250,000. RESIDENTIAL DEVELOPMENT, Hardy and Dungan Rds., PHILA., PA. W. Wallace Weingartner, 21 S. 15 St., Phila., Pa., archts.

▲ **Philip Litman**, 4950 Monument Ave., Phila., Pa. Separate Contracts. $1,250,000. RESIDENTIAL DEVELOPMENT, Rhoads St., PHILA., PA.

Bucks Rental Co., c/o Sanders & Thomas Assoc., archts. Pottstown, Pa., cancelled bids to have been opened June 15, truck maintenance and service bldg., PHILA., PA. Over $100,000. Project abandoned. CD 6/17.

† **Bureau Yards & Docks**, Annapolis, Md. rejected bids June 14 TEST ROOMS for intercommunications sys., Bldg. 100 U. S. Naval Engr. Experimental Station NOY 84720, Spec. 44186, ANNAPOLIS, MD. CD 6/3.

The Palladi Constr. Co., 641 Aldershot Rd., Baltimore 29, Md. Separate Contracts. $444,000. 44 brick DWELLINGS, Maiden Choice Village on Gateway Terrace, BALTIMORE, MD.

Robin Constr. Co., 12600 Grace Max St., Wheaton, Md. Owner Builds. $850,000. 67 unit APARTMENT HOTEL Eastern Ave., SILVER SPRING, MD. John d'Epagnier, 1004 Ripley St., Silver Spring, Md., archt.

▲ **Kay Constr. Co., Wheaton, Md.** Owner Builds. $1,500,000. Indian Springs Country CLUB, Glenmont Rd., WHEATON, MD. CD 1/21.

Dan Pollin, Inc., 1414 Upshur St. N. W., Wash., D. C., Owner Builds, $459,000, constr. 3 story, 51 units, brick, cinder block APARTMENT, 5120 Sargent Rd. N. W., WASH., D. C., Beria & Able, 2000 P St. N. W., Wash., D. C., archts.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Ocala—BA 8/1—City, at office R. R. Wynne, city purch. agent, City Hall, elevated water tank, appurtenances. Plans deposit $15. Russell & Axon, P. O. Box 1431, Municipal Airport, Daytona Beach, consult. engrs. CD 11/5.

La., Bogalusa—BA 8/2—City, runway, south taxiway and apron for municipal airport. Plans deposit $50, Bedell & Nelson, 840 Union St., New Orleans, engrs. CD 1/14/47.

† **NORTH CAROLINA**—BA 8/4—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington, Va.

Watauga Co.—grading, draining, crushed gravel or crushed stone base course, etc. 4.633 mi. from near Sandy Flat Gap westerly, Blue Ridge Parkway, Proj. 2G2, adv. ENR 7/21.

† **Ala., Mobile**—OUTDOOR SWIMMING POOL—BA About 8/9—U. S. Eng., Grant St., Mobile, constr. 63x82 ft. concrete outdoor swimming pool, 43x92 ft. concrete frame bath house, 10 ft. high, etc., Brookley Air Force Base, CD 10/31/52.

† **VIRGINIA**—BA 8/9—Bureau P. Rds., Dpt. Commerce, 1440 Columbia Pike, Arlington,

James City Co.—grading, draining 6.275 mi. Colonial Parkway from College Creek to Jamestown Island. Proj. 1D9-1E2; adv. ENR 7/21.

BUILDINGS—BA

La., Hammond—DORMITORY—BA 8/2—State Bldg. Auth., State Capitol, Baton Rouge, Proj. No. E 5 SE-3 2 story, brick, 42,250 sq. ft. dormitory, Southeastern Louisiana College. Plans deposit $40, Sol Rosenthal & Assn., 454 Lee Circle Bldg., New Orleans, engrs.

† **Va., Fort Belvoir**—CHAPEL—BA On Or About 8/16—U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. L-shaped, 118x130 ft. brick faced, masonry back-up chapel, ENG-49-080-56-1-(1). CD 7/17/52.

BUILDINGS—SLC

Ala., Huntsville—HOSPITAL—Huntsville Hospital, Inc., Huntsville, soon lets contract 3 story hospital addn. $750,000. Van Keuren & Davis, 3004 7th Ave. S., Birmingham, archts.

HEAVY CONSTRUCTION—LB & CA

† **S. Zarpas**, 2503 50th Ave., Tuxedo, Md., CA $606,550, constr. Special AAA Site, W-65, control and launching areas, ENG-49-080-55-73-(63), vicinity Lorton, VIRGINIA. U. S. Eng., 1st and Douglas Sts. N. W., Wash., D. C. Bids June 30, CD 7/6 under LB.

▲† **Boyle Constr. Co.**, Sumter, S. C., LB $1,044,870, constr. utilities and paving, NOY 85634, Marine Corps Auxiliary Landing Field, BEAUFORT, S. C. P. Wks. Officer, Dpt. Navy, Naval Base, S. C. Bids June 28. CD 6/6.

J. A. Jones Constr. Co., 209 W. 4 St., Charlotte, N. C., LB $489,800, constr. supply storage bldg., welfare and recreation bldg., inflammable storage bldg., squadron admin. bldg., NOY 85629, (Beaufort, S. C.).

▲† **J. A. Jones Constr. Co.**, 209 W. 4 St., Charlotte, N. C. CA $2,856,700, constr. eight 172-man barracks and 2,000-man subsistence bldg., bachelor officers quarters, Marine Corps Auxiliary Landing Field, NOY 85628, BEAUFORT, S. C. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 23. CD 6/29, under LB.

▲† **Wm. H. Singleton Co., Inc.**, 1240 Jefferson Davis Hy. Arlington, Va. and **W. H. Sullivan Co., Inc.**, 4413 W. Market St. Ext., Greensboro, N. C. CA $1,047,000, central heating plant and fire pumping station, Marine Corps Auxiliary Landing Field, NOY 85633, BEAUFORT, S. C. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 24. CD 7/8, under LB.

▲† **Boyle Constr. Co.**, Sumter, S. C. CA $1,044,087, utilities, paving, Marine Corps Auxiliary Landing Field, NOY 86434, BEAUFORT, S. C. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 28. CD 7/12 under LB.

GEORGIA—State Hy. Dpt., Capitol Square, Atlanta,

E. F. Groover, Moultrie, Ga., CA $589,870. grading, paving, wid'n., resurf. 10.77 mi. Moultrie-Sylvester Rd., State Rte. FAP F 033-1 (3) and F-098-1 (1) Colquitt Co. Bids June 24. Awarded June 28. CD 6/29, under LB.

† **H. W. Peerson Drilling Supply Co.**, 1114 7th Ave., S., Birmingham, Ala., CA $557,875, addnl. utilities at Naval Air Station, NOY 86693, Glynco, BRUNSWICK, GA. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 28. CD 7/6, under LB.

FLORIDA—State Road Dpt., Tallahassee,

Powell Bros., Inc., Box 281, Fort Lauderdale, Fla., CA $505,637, maintenance traffic; constr. remove detour; embankment; rock base with Type 1-A surf. tr. and Type II b. conc. surf. course, constr. 235 ft. bridge and I-beam approach spans on concrete pile bents and incid. bridge items 0.288 mi. over South Fork of New River, State Rd. No. 84, Job No. 8608-175, Broward Co. Bids June 23, awarded July 7. CD 6/28, under LB.

† **D. F. McMains & Son**, 8329 New Kings Rd., Jacksonville, Fla., LB $200,000. cold storage, Naval Air Base, NOY 86629, Cecil Field, JACKSONVILLE, FLA. Dpt. Navy, P. Wks. Office, Naval Base, Charleston, S. C. Bids June 29. CD 6/9.

† **Gravier & Harper**, Box 1391, Alexandria, La. CA $869,522. airmen's dormitory, Alexandria Air Force Base, Inv. 55-123, ALEXANDRIA, LA. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids June 15, awarded July 1. CD 6/21, under LB.

LOUISIANA—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

Austin Bridge Co., 1056 Neosho St., Baton Rouge, La. LB $326,329. swing span with I-beam approach spans, c. conc. approaches 0.34 mi. Bayou Bridge on Lewis St. in New Iberia, S.P. 713-01-48, Iberia Parish; LB $309,700. steel pontoon bridge, c. conc. approaches Bayou Lafourche Bridge at Galiano, S.P. 713-01-69, Lafourche Parish. Bids June 29. CD 6/8.

▲ **LOUISIANA**—State Hy. Dpt., Highway Office Bldg., Baton Rouge,

La.—**Anderson & Courtney**, Amite, La. LB $188,273. aggregate type course 8.799 mi. Stoney Point-Miss. State Line Hy., State Rte. 468, S.P. 859-05-02, 859-17-02, Washington Co.;

La.—**Barber Bros. Co.**, 2636 Dougherty Dr., Baton Rouge La. LB $290,417. (2 bidders) soil cement base course 9.568 mi. New Roads Labarre Hy., State Rte. No. 35 and 30D, S.P. 61-01-12, 839-11-05, F. A. Secondary Proj. S 323 (1), Pointe Coupee Parish; LB $226,667. (2 bidders) aggregate type or soil cement base course 6.875 mi. Howell-Deerford Hy., State Rte. 276, S.P. 817-05-03 East Baton Rouge Parish; LB $226,805. aggregate type or soil cement base course, bit. surf. tr. 7.313 mi., Sunset-Bosco Hy., State Rte. 117 and 2104, S.P. 393-07-03 and 849-37-02, St. Landry Parish., LB $75,732. (2 bidders) aggregate type or soil cement base course 1.63 mi., Lukeyville Back Brusly Hy., State Rte. 316 and 317, S.P. 861-09-01, West Baton Rouge Parish;

La.—**Harvey Core**, Covington, La. LB $143,321. (2 bidders) aggregate type or soil cement base course 4.327 mi., Cheneyville Echo Hy., State Rt. No. 271, S.P. 372-06-04, Rapides Parish;

La.—**Anderson & Courtney**, Amite, La. LB $137,903. (2 bidders) aggregate type or soil cement base course, bit. surf. tr. 6.912 mi., Bush-Union Grove Hy., State Rte. 189, S.P. 269-10-03, St. Tammany Parish;

La.—**T. L. James Constr. Co.**, Ruston, La. LB $276,349. (2 bidders) aggregate type or soil cement base course 7.408 mi., Laplin-Andrew Hy., State Rte. 177, S.P. 207-03-06, Vermillion Parish;

La.—**Continental Constructors, Inc.**, King Hotel, Baton Rouge, La. LB $391,821. (2 bidders) aggregate type or soil cement base course 10.516 mi. Hayes-Thornwell Welsh Hys. State Rte. 98, 105 and 734, S.P. 196-03-08, 198-30-03, Jefferson Davis Parish, Bids June 29, CD 6/20 and 6/23;

La.—cancelled bids to have been opened June 29, aggregate type or soil cement bas course, bit. surf. tr. 16,965 mi. Hackberry-Holly Beach Hy., State Rte. 104, S.P. 31-02-09, Cameron Parish. Will re-advertise. CD 6/23.

† **R. P. Farnsworth & Co., Inc.**, Box 850, New Orleans, La. CA $214,400. crash and fire facilities Joint Air Reserve Training Center, NOY 86366, NEW ORLEANS, LA. Bureau Yards & Docks, Bldg. 16, Naval Station, New Orleans, La. Bids June 28. CD 6/8.

▲ **Boh Bros. Constr. Co.**, 2400 Cypress St., New Orleans, La. CA $1,414,098. storm drainage, sanitary sewerage, complete water sys., concrete paving and sidewalks, grading, seeding in east half of Lakeshore Subdivision, NEW ORLEANS, LA. Orleans Levee Dist., 200 Civil Courts Bldg., New Orleans, La. Bids June 21, awarded July 1.

J. F. Pritchard & Co., 2261 W. Holcomb St., Houston, Tex. CA Approx. $730,000. natural gas compressor station, incl. 3,500 H.P. 4-cycle turbo charged vertical gas engine, centrifugal compressor on 36 in. gas line. near Stanton, Powell Co., KENTUCKY. Gulf Interstate Gas Co., 1125 Brazos St., Houston, Tex. Bids June 15, awarded June 28. CD 5/27.

▲ **KENTUCKY** — Commonwealth of Ky., Dpt. Hys., Frankfort,

Ky.—**Foster & Creighton Co.**, American National Bank Bldg., Nashville, Tenn. LB $1,257,865. (3 bidders) c. conc. 0.417 mi. North-South Expressway, FI and FGI 519 (3), SP 56-798, Jefferson Co.;

Ky.—**The Allen Co., Inc.**, Winchester, Ky. LB $261,871. b. conc. Class I surf. (limestone aggregate) 5.304 mi. Louisville-Shelbyville Rd., F 117 (25), SP 56-58, Jefferson Co.;

Ky.—**Ballard & Hamilton**, Bardstown, Ky. LB $73,340. reconstr., traffic bound limestone 0.799 mi. Pleasant Grove Ridge Rd., The Van Buren-New Liberty Church Rd., RS 3-471, RS 3-151, Anderson Co.;

Ky.—**Carey Constr. Co. & H. C. Adams**, 613 Citizens Bank Bldg., Lexington, Ky. LB $206,388. (3 bidders) blt. surf. Class C-1 20.4 mi., various roads, Lewis Co.

Ky.—**L. P. Cavett Co.**, Lockland, O. LB $92,110. (3 bidders) bit. surf. Class C-1 on dense graded aggregate base 9.48 mi., various roads, Taylor Co.;

Ky.—**Circle Constr. Corp.**, Bowling Green, Ky. LB $122,392. (2 bidders) blt. surf. Class C-1, 25.4 mi. various roads, Warren Co.

Ky.—**M. T. Codell & Co., Inc.**, 363 Crescent Ave., Winchester, Ky. LB $175,570 (3 bidders) traffic bound river grav. S 566 (1), RS 39-253, Gallatin Co.;

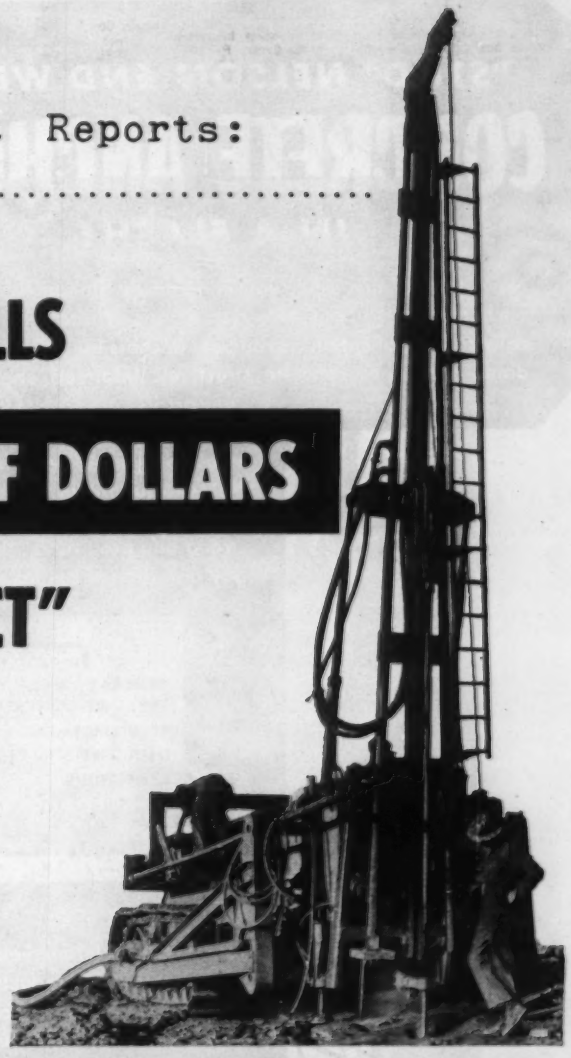
Ky.—**R. R. Dawson Bridge Co.**, Bloomfield, Ky. LB $76,842. (3 bidders) reconstr. b. conc. Class I on waterbound macad. base 1.523 mi. Elizabethtown-US 62 Rd., RS 47-9, Hardin Co.;

Ky.—**Ellis, Kelly & Co.**, Owensboro, Ky. LB $108,759. (2 bidders) blt. surf. Class C-1, blt. penetration macad. with seal 11.375 mi. various roads, Henderson and Union Counties

continued on page 132

Drilling Superintendent Reports:

"JOY CHALLENGER DRILLS SAVED THOUSANDS OF DOLLARS ON OUR DAM PROJECT"



Two Joy TWM-3 Challenger Hammer Drills were tried on this project after difficulty had been experienced in maintaining drilling schedules. Six 4" Wagon Drills had been barely able to keep the 3-yard shovel in rock.

The Two Joy Challengers not only easily kept ahead of the shovel, but also reduced labor and powder costs. The contractor was so impressed with this performance that he added a *third* Challenger when it became necessary to increase the depth of cut to 100 ft.

The drilling superintendent then enthusiastically reported that he was saving his company "thousands of dollars" by being able to make this deep cut so economically with his Challenger drills. The table at right compares production figures of the two types of drills.

The revolutionary TWM-3 Challenger is a "package" unit for mounting on a used crawler-tread tractor or similar vehicle. The package consists of mounting brackets, mast, and a powerful 5¼" hammer drill . . . the largest ever built. Maximum hole size is 4½".

For complete details on the Joy Challenger, write for Bulletin 87-U to ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario*

DRILL PERFORMANCE Wagon Drill vs. Joy Challenger

	1 Wagon Drill	1 Challenger
Bit Size	2½"	4"
Hole Spacing	6' x 6'	15' x 15'
Hole Depth	24' (max)	35' to 40' (later 100')
Footage drilled per shift	200'	180'
Yardage per foot drilled	1⅓	8½
Yardage per shift	270	1400

Consult a Joy Engineer

for AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS • CORE DRILLS • BLASTHOLE DRILLS • PORTABLE HOISTS • FANS BLOWERS • HYDRAULIC HOSE AND COUPLINGS

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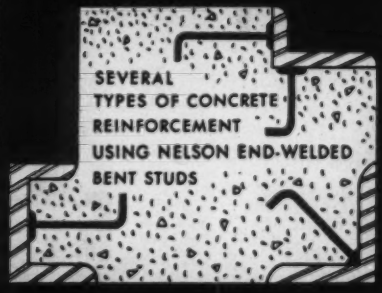

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NELSON STUD WELDING DIV OF GREGORY INDUSTRIES, INC **LORAIN, OHIO**

continued from page 130

Ky.—**Geoghegan & Mathis & MaGo Constr. Co.,** Bardstown, Ky. LB **$369,099.** (3 bidders) bit. surf. Class C-1 and 3 in. bit. penetration macad. and seal 34.366 mi. various roads, Grayson, Hardin, Butler, Edmonson and Hart Counties.

Ky.—**Holbrook Bros.,** Salyersville, Ky. LB **$78,533.** reconstr., traffic bound limestone 3.036 mi., Crafts Creek Rd., RS 77-440, Magoffin Co.;

Ky.—**Kentucky Road Oiling Co.,** Frankfort, Ky. LB **$198,336.** (1 bidder) bit. surf. Class C-1 using limestone aggregate 16.388 mi. various roads, Johnson and Morgan Counties.;

Ky.—**McDade & McDade,** Fulton, Ky. LB **$107,738** (3 bidders) bit. surf. Class C-1 10.95 mi. various roads, Calloway Co.; LB **$114,350** (3 bidders) bit. surf. Class C-1, 14.212 mi. various roads, Marshall Co.; LB **$122,935** (3 bidders) bit. surf. Class C-1, 13.415 mi. various roads, Calloway Co.;

Ky.—**Middle West Roads Co.,** 1201 Short St., Louisville, Ky. LB **$280,900** (1 bidder) b. conc. Class I surf. (limestone aggregate) 7.425 mi. Mayfield-Wickliffe Rd., F 509 (6), SP 42-408, Graves Co.;

Ky.—**Ohio Asphalt Paving Co.,** 823 Prospect St., Portsmouth, O. LB **$79,599** (2 bidders) b. conc. Class I surf. 12.855 mi., various roads, Greenup and Lewis Counties;

Ky.—**Robert M. Robinson,** R. F. D. 1, Owensboro, Ky. LB **$112,996** (2 bidders) bit. surf. Class C-1 on dense graded aggregate base 11.9 mi. various roads, Livingston Co.; LB **$191,281** (3 bidders) bit. surf. Class C-1 penetration macad. surf. with seal 20.206 mi. various roads, Barren, Hart and Metcalfe Counties; LB **$127,406** (3 bidders) bit. surf. Class C-1, 15.082 mi. various roads, Union Co.;

Ky.—**State Contg. & Stone Co.,** Hartford, Ky. LB **$104,641** (1 bidder) bit. surf. Class C-1 (limestone aggregate) 18.242 mi., various roads, Davies Co.;

Ky.—**R. B. Tyler Co.,** 1446 Levering St., Louisville, Ky. LB **$287,116** (2 bidders) b. conc. Class I surf. (limestone aggregate) 7.282 mi. Mayfield-Wickliffe Rd., F 509 (8), SP 20-124, Carlisle Co.; LB **$288,210** (1 bidder) b. conc. Class I surf. (crushed river grav. aggregate) 8.065 mi. Mayfield-Wickliffe Rd., F 509 (7), SP 4-161, Ballard Co.; LB **$77,549** (1 bidder) bit. surf. Class C-1 (crushed grav. aggregate) 8.379 mi. various roads, Fulton Co.;

Ky.—**Waters Constr. Co.,** Elizabethtown, Ky. LB **$87,541** (1 bidder) bit. surf. Class C-1, 14.546 mi. various roads, Hardin Co.;

Ky.—**T. C. Young,** Williamsburg, Ky. LB **$100,747.** (3 bidders) reconstr., traffic bound limestone 6.021 mi. Graefenburg-Harrisonville Rd., RS 106-646, Shelby Co. Bids July 1. CD 6/16.

† **Purchasing & Contg. Officer,** Fort Campell, Ky. cancelled bids to have been opened June 28, heating facilities and heating room, I.F.B. 15-056-55-154, FORT CAMPBELL, KY. CD 6/17.

Triangle Terminal of Louisville, P. O. Box 54, Camp Ground Rd., Louisville, Ky. Owner Biulds. **$100,000.** steel tanks and loading docks, LOUISVILLE, KY.

Thomas D. Nolan, 4017 S. Brook St., Louisville, Ky. CA **$991,000.** Contr. 205, Upper Dry Run Trunk Sewer Sect. D, LOUISVILLE, KY. **Metropolitan Sewer Dist.,** 414 W. Jefferson St., Louisville, Ky. Bids June 30, awarded July 7. CD 7/6, under LB.

BUILDINGS—LB & CA

▲ **River Oaks, Inc.,** Fairfax, Va. Owner Builds. **$6,700,000.** 240 custom-built HOMES, 189 acres between Langley and Potomac River, McLEAN, VA. Theodore L. Pryor, 6721 19th Rd., N. Arlington, Va., archt.

Skinner & Ruddock, King St. Exten., Charleston, S. C. LB **$403,268,** Courtenay Elementary SCHOOL, CHARLESTON, S. C. City Bd. School Comrs., 14 St. Philip St., Charleston, S. C. Bids July 6. CD 6/8.

Ed L. Powers Constr. Co., Box 338, Jessup, Ga., LB **$773,600.** constr. 4 SCHOOL projects , HINESVILLE, GA. Ga. School Bldg. Authority, 41 Exchange Pl. S.E. Atlanta, Ga. Bids June 30. CD 6/6.

Maxwell & Kiker and Busbin & Kimbell, 100 Allen Street, Summerville, Ga., CA **$739,000,** 4 SCHOOL constr. projs., SUMMERVILLE, GA. Ga. SCHOOL Bldg. Authority, 41 Exchange Pl. S.E., Atlanta, Ga. Bids June 14, awarded June 25, CD 6/20, under LB.

Colte Somers Co., Vidalia, Ga., CA **$722,000.** Warren County Elementary and High SCHOOL, WARRENTON, GA. State School Bldg. Auth., 41 Exchange Pl. S.E., Atlanta, Ga. Bids June 9. CD 6/14, under LB.

† **Kenneth Fulghum, Inc.,** Palafox Hy., Pensacola, Fla., CA **$591,280,** LABORATORY FACILITIES BLDG., Naval Mine Countermeasures Station, NOY 85617, PANAMA CITY, FLA. P. Wks. Officer, Dpt. Navy, Naval Base, Charleston, S. C. Bids June 29. CD 7/6, under LB.

† **Whaley Co.,** 6424 1st Ave. N., Birmingham, Ala., CA **$276,600,** ROCKET WEAPONS DEVELOPMENT BLDG. and PHYSICAL TESTING LABORATORY and appurtenances, Redstone Arsenal, HUNTSVILLE, ALA. U. S. Eng., Grant St., Mobile, Ala. Bids June 20. CD 7/6, under LB.

Bristol Steel & Iron Co., Bristol, Va. CA **$92,770.** structural steel, fabrication, erecting steam generating PLANT, FORD, KY. East Kentucky Rural Electric Corp., Winchester, Ky. Bids June 29. CD 6/22.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **Ill., Springfield**—HEATING PLANT—BA 7/26—Office of U. S. Property & Fiscal Officer, Illinois National Guard General Depot, Springfield, heating plant alterations at Illinois National Guard General Depot, NG-11-115-56-1.

Wis., Milwaukee—BA 7/26—City, recontr. north Bascule bridge of 6th St. Viaduct. $200,000. Plans deposit $10.

George C. Ashton, br. archt. Lloyd D. Knapp, city engr. CD 6/22.

† O., Columbus—PERIMETER ROAD—BA On Or About 8/2—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., perimeter road and security fence, Lockbourne Air Force Base, ENG-46-22-56-1.

▲† O., Dayton—HEADQUARTERS COMMAND BLDG.—BA 8/10—U. S. Eng., P. O. Box 59, Louisville 1, Ky., 4 story, part bsmnt., 60x644 ft. main wing of headquarters command bldg., A. R. D. Wright-Patterson Air Force Base, ENG-15-029-56-1. CD 9/27/51.

† Ill., Dwight—BA 8/16—Veterans Admin., Munitions Bldg., Wash. D. C., automatic fire sprinkler system at Veterans Admin. Hospital.

BUILDINGS—BA

† O., Kings Mill—DEHUMIDIFIED STORAGE—BA 7/26—U. S. Eng., 237 Fourth Ave., Huntington 18, W. Va., rehabilitation for dehumidified storage at Kings Mill Ordnance Plant, ENG-46-022-56-2. Bids 6/24, rejected. CD 6/9.

▲ Mich., St. Joseph—ADMINISTRATION—BA 7/27—Whirlpool Corp., D. W. Alexander, vice pres., St. Joseph, 1 and 2 story administration bldg., North Shore Dr. $1,500,000, Smith-Hinchman & Grylls, Inc., 800 Marquette Bldg., Detroit, archt. CD 12/1.

Mich., Waldron—SCHOOL—BA 7/28—Bd. Educ., Wright Twp. School Dist., high school. Louis C. Kingscott & Assoc., Inc., 511 Monroe St., Kalamazoo, engr.-archt. CD 12/30.

O., Dayton—SCHOOL—BA 8/3—Bd. Educ., 348 W. First St., 2 story, ground story Whittier School addn. "B", alterations, 721 Miami Chapel Rd. Plans deposit $15, Freeman A. Pretzinger, Reibold Bldg., archt. CD 5/10.

▲ O., Maumee—COTTAGES, etc.—BA 8/9—Comrs. Lucas Co., Court House, Toledo, receiving cottage hospital and 3 brick stone cottages Lucas County Children's Home. $1,000,000. Hahn & Hayes, 723 Adams St., Toledo, archts. CD 11/30.

▲ Ill., Quincy — HIGH SCHOOL — BA 8/10—Quincy School Dist. Bd. Educ., Quincy, brick, steel, concrete high school, Baldwin Park area. $2,900,000. CD 4/7/54.

Ind., New Castle—CHURCH—BA On Or About 8/15—First Christian Church, R. M. Thompson, Pastor, New Castle, church, Bundy Ave. and Ind. Rd. 3. $500,000. CD 1/19.

Ill., Chicago—FACTORY—Bids Asked—American Spring & Wire Specialty, 816 N. Spaulding St., 2 story, 20,000 sq. ft. factory addn. $350,000. Peter Camburas, 105 W. Madison St., Zone 2, archt.

Ill., Grays Lake—FACTORY—Bids Asked—Gefko Mfg. Co., Grays Lake, 14,000 sq. ft. factory. $120,000. Melvin A. Nelson, 4641 Hermitage St., Chicago archt.

BUILDINGS—SLC

Mich., Dearborn—WAREHOUSE—Peoples Outfitting Co., 150 Michigan Ave., soon lets contract warehouse addn., alterations, East Warren St. $150,000. Charles N. Agree, 1140 Book Bldg., Detroit, archt. CD 11/16.

HEAVY CONSTRUCTION—LB & CA

B. F. Perry Constr. Co., 106 N. Main St., Akron, O. CA $360,509. industrial water reservoir to hold 1 m.g. with 2 dams between Harrington and Warner Rds. on 90 acre tract on Tuscarawas River, AKRON, O. State Dpt. P. Wks., State Dpt. Bldg., Columbus, O. Lee Blackburn, ch. engr. for Div. P. Wks. Awarded July 1.

Summit Asphalt Paving Co., 475 Butler St., Akron, O. CA $92,210, Est. $80,000. (2 bidders). widen, pave Cedar St. from Main St. to Broadway, AKRON, O. City, Leo Walter, service dir., 203 Municipal Bldg., Akron, O. Awarded June 28. CD 12/10/43.

Stouffer Constr. Co., 525 Beacon St., Akron, O. LB $100,115, est. $100,335. (1 bidder) recreation area at Kent State University Training School, KENT, O. State Dpt. P. Wks., State Dpts. Bldg., Columbus, O.

John B. Jurgensen Co., Newtown, O. LB $396,631. (6 bidders) Sciota County Airport, PORTSMOUTH, O. Comrs. Scioto Co., Courthouse, Portsmouth, O. Bids June 28. CD 11/7/52.

John H. Murnane Co., 802 E. 67 St., Cleveland, O. CA $539,000. modernize and enlarge sewage treatment plant, SALEM, O. City, Salem, O. Awarded June 30. CD 6/9/54.

Chicago Bridge & Iron Co., Guildhall Bldg., Cleveland, O. CA $49,435. 600,000 gal. water standpipe at Genevieve Blvd. and Liberty Rd., 98 ft. high and 32 ft. across, STOW, O. Comrs. Summit Co., Court House, Akron, O. Bids June 24, awarded June 30. CD 6/14.

Leon Boulton & Son, Westland Ave., Toledo, O. CA $116,979, est. $148,000. (6 bidders) water supply line 559 Heather Downs area 24 in. main in Glendale, 16 in. main in Byrne Rd., 12 in. main in Byrne Rd., TOLEDO, O. Comrs. Lucas Co., Court House, Toledo, O. Bids June 27. CD 6/16.

Rogers Electrical Co., 527 Conrad St., Toledo, O. LB $88,700. superstructure work replacing power sys. on Cherry Street Bridge, TOLEDO, O. City, City Hall, Toledo, O. Bids July 5. CD 6/17.

West Penn Pipe Lines Constr. Co., Irwin, Pa. CA $520,382. approx. 20 mi. water lines to serve Brookfield Twp, near WARREN, O. Comrs. Trumbull Co., Court House, Warren, O. Awarded June 30. CD 6/29, under LB.

▲ ILLINOIS—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

S. J. Groves & Sons Co., 1104 W. Reynolds St., Springfield, Ill. and J. C. O'Connor & Sons, Inc., 2104 Miner St., Fort Wayne, Ind., CA $2,172,650, c. conc. 6.32

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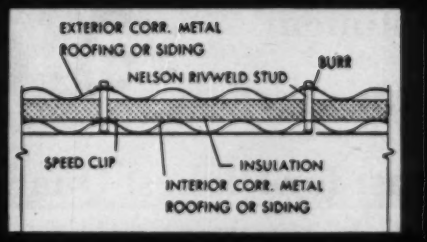

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NELSON STUD WELDING DIV OF GREGORY INDUSTRIES, INC LORAIN, OHIO

mi. F. A. 113 for Illinois approach to new bridge over Wabash River, White and Gallatin Counties. Bids June 24, awarded July 6. CD 6/30, under LB.

Herlihy Midcontinent Co., 135 S. LaSalle St., Chicago 3, Ill., CA $730,690, E. Lake St. and Beaubien Court Viaduct to accommodate new Prudential Bldg., CHICAGO, ILL. City, City Hall, Chicago, Ill. Awarded July 28. CD 12/2/53.

Herlihy-Mid Continent Co., 135 S. LaSalle St., Chicago 3, Ill., CA $501,283, grade separation Northwest Expressway at Madison St., CHICAGO, ILL. City, City Hall, Chicago, Ill. Bids May 19, awarded July 6. CD 5/25 under LB.

▲ **Geo. Cassidy & Son**, 5125 W. Division St., Chicago, Ill. CA $3,000,000. television studio conversion from skating rink, CHICAGO, ILL. Columbia Broadcasting System, 501 Madison Ave., New York, N. Y. Bids May 2, awarded July 5. CD 4/28.

Consolidated Constr. Co., 101 S. Wells St., Chicago 6, Ill., CA $300,000. grade separation Northwest Expressway at Washington Blvd., CHICAGO, ILL. City, City Hall, Chicago, Ill. Awarded July 6. CD 12/2/53.

G. H. Sternberg & Co., 1609 Delmar Ave., Granite City, Ill., CA $98,644, Keebler St. imprvt., COLLINSVILLE, ILL. City, City Council, City Hall, Collinsville, Ill.

Preload Div. of Davis Waterproofing Co., 2211 19 St., Kansas City, Mo., LB $128,400, concrete reservoir, DOLTON, ILL. Village, Dolton, Ill. CD 3/23.

▲ **Thompson-Starrett Co., Inc.**, 130 N. Wells St., Chicago, Ill., LB $1,242,696. pumping station, filtration plant, sewers, paving, EAST MOLINE, ILL. City, East Moline, Ill. Consoer, Townsend & Assocs., 351 E. Ohio St., Chicago 11, Ill., engrs. Bids June 27.

Tomaro Contractors, 2728 E. Layton Ave., Cudahy, Wis., LB $269,670, storm sewers in various streets, CUDAHY, WIS. City, Cudahy, Wis. Bids July 1. CD 6/6.

Grange Constr. Co., 2710 E. Norwich Ave., Greenfield, Wis., LB $163,377, sanitary sewers in Shirley Crest Subdivision, GREENFIELD, WIS. Town, 7325 W. Forest Home Ave., Milwaukee, Wis. Bids July 5. CD 6/20

Badger Constr. Co., 229 E. Wisconsin Ave., Milwaukee 2, Wis., CA $92,420, asph. pavement W. North Ave., MILWAUKEE, WIS. City, City Hall, Milwaukee, Wis. Bids July 1, awarded July 6. Lloyd D. Knapp, Milwaukee, Wis., city engr.;
White Constr. Co., 710 N. Plankington Ave., Milwaukee 3, Wis., CA $105,788, asph. pavement N. 27 St. (Milwaukee, Wis.).

▲† **Joseph D. Bonness & Becker Constr. Co.**, 1409 N. 27 St., Milwaukee, Wis., CA $2,669,486, AFRTC facilities, Mitchell Field, ENG-11-032-55-33, MILWAUKEE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 29. CD 7/6, under LB.

Weir Contg. Co., 12592 N. Inkster Rd., Detroit 23, Mich. LB $279,242. 64,539 sq. yd. c. conc. various streets, OAK PARK, MICH. City, Louise Shaw, clk., 13600 Oak Park Blvd., Oak Park, Mich. Bids July 5. CD 6/30.

BUILDINGS—LB & CA

▲ **Edw. J. DeBartolo**, 2620 Market St., Youngstown, O. CA Est. $2,500,000. SHOPPING CENTER, incl. 28 stores on 45 acres, parking, at Kenwood and Montgomery Rds., Kenwood, CINCINNATI, O. Kenwood Plaza, Inc., Kenwood and Montgomery Rds., Cincinnati, O. CD 3/26/54.

Slabaugh Bros., 190 S. Sixth St., Columbus, O. Owner Builds. $384,400. thirty-one 1 story, frame DWELLINGS in 2600-2700 blocks of Swansea Rd. and 2600-2800 blocks of Woodstock Rd., COLUMBUS, O.

▲ **Frank Messer & Sons, Inc.**, 4612 Paddock St., Cincinnati, O. LB $1,085,700. general contract, STUDENT UNION at Miami University, OXFORD, O. State Dpt. P. Wks., State Dpts. Bldg., Columbus, O. Bids June 9. CD 5/13.

▲ **Austin Co.**, 16112 Euclid St., Cleveland, O. CA Total est. $5,000,000. cement PLANT with 1,250,000 bbl. cement cap. a year, PAULDING, O. Consolidated Cement Co., Cement City, Mich. CD 6/22.

▲ **Manor Development Co.**, Arthur P. Ach, pres., 3504 Woodley St., Toledo, O. Owner Builds. $2,000,000. 200 ranch HOMES on 47 acre tract in Shoreland Area of Washington Twp. near Suder and Shoreland Ave., TOLEDO, O.

Bailey Real Estate Corp., 1803 Jefferson St., Toledo, O. Owner Builds. $350,000. 20 ranch type HOMES in Heather Estates east of Byrne Rd., north of Schneider Rd., streets, sewers, utilities, TOLEDO, O.

▲ **Geo. W. Lathrop & Sons, Inc.**, 1510 Montcalm St., Toledo, O. LB general contract HOSPITAL expansion, NURSES' HOME, etc., TOLEDO, O. Total est. $2,500,000. Mercy Hospital, 23 and Madison Sts., Toledo, O. Bids July 1. CD 6/22;
Robt. Carter Co., 125 S. Erie St., Toledo, O. LB plumbing work. (Toledo, O.);
Eggleston & Son, 255 Gradolph St., Toledo, O. LB electrical work. (Toledo, O.);
Haughton Elevator Co., 671 Spencer St., Toledo, O. LB elevators. (Toledo, O.).

▲ **Grant-Holladay Constr. Co.**, Callahan Bldg., Dayton, O. Owner Builds. $1,228,400. one story, 148 HOMES in Lincoln Knolls, YOUNGSTOWN, O.

▲ **Joseph Bucheit & Son**, 4040 Solomon St., Youngstown, O. CA Est. $1,000,000. 1 story, brick, steel, concrete WAREHOUSE and OFFICES for wholesale grocer on N. Meridan Rd., YOUNGSTOWN, O. Tamarkin Co., 102 Fifth Ave., Youngstown, O. John Samuels of Damon, Worley & Samuels, 215 Lincoln St., Youngstown, O., engrs. Ballinger-Meserole, 121 N. Broad St., Phila., Pa., engrs. CD 5/2.

Indiana Constr. Co., Inc., Fort Wayne Bank Bldg., Fort Wayne, Ind., CA est. $100,000. 8,500 sq. ft. SALES-SERVICE addn., 500 E. State Blvd., FORT WAYNE, IND. Hefner Chevrolet Co., 500 E. State Blvd., Fort Wayne, Ind. T. R. Shoaff, 922 W. Berry St., Fort Wayne, Ind., archt.

▲ **Summer Sollitt Co.**, 307 N. Michigan St., Chicago, Ill. CA $20,000,000. Steam Generator PLANT, GARY, IND. Northern Indiana Public Service Co., 5265 Hohman St., Hammond, Ind. Bids June 27, awarded July 6. CD 6/14.

▲ **E. W. Sproul Constr. Co.**, 173 W. Madison St., Chicago 2, Ill., LB $1,107,634, HIGH SCHOOL, ARLINGTON HEIGHTS, ILL. Arlington Twp. High School, 502 W. Euclid St., Arlington Heights, Ill. Bids June 29. CD 6/22.

Maxon Constr. Co., F. N. B. Building, Barrington, Ill. Own Forces. $400,000. 20 HOMES, BARRINGTON, ILL.

Berglund Maintenance Co., 8410 S. South Chicago Ave., Chicago, Ill., LB $585,355, Crane Technical HIGH SCHOOL addn., CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago 1, Ill. Bids July 1.

▲ **Schorsch Bros.**, 6059 Irving Park, Chicago, Ill. Own Forces. $1,200,000. 40 HOMES, sewers, paving, CHICAGO, ILL. Otto Monberg, 3306 N. Newland St., Chicago, Ill., archt.

Leo Michuda & Son, 514 E. 95 St., Chicago, Ill. CA $849,904, Brown SCHOOL, CHICAGO, ILL. Bd. Educ., 228 N. LaSalle St., Chicago 1, Ill. Bids June 10, awarded July 1. CD 6/22, under LB.

C. B. Sommers, 1448 W. Henderson St., Chicago, Ill. Own Forces. $400,000. 20 HOMES, southwest side CHICAGO, ILL.

▲ **Consolidated Builders Co.**, Flossmoor, Ill. Own Forces. $2,200,000. 150 HOMES, CHICAGO HEIGHTS, ILL. E. V. Buchsbaum, 7658 Constance St., Chicago, Ill., archt.

▲ **Forest Constr. Co.**, 10310 S. Michigan St., Chicago, Ill. Own Forces. $1,000,000. 54 HOMES, HARVEY, ILL.

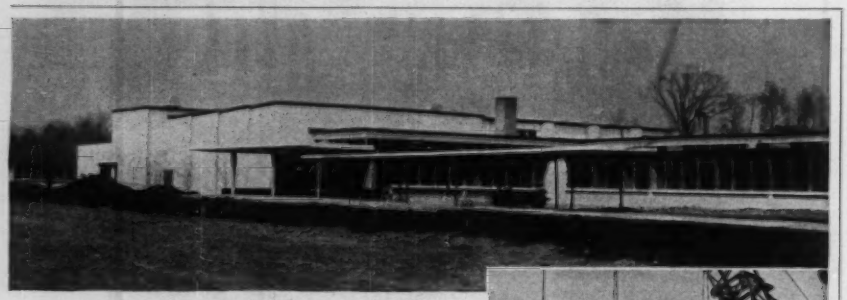
L. Sadin, 7941 Mason St., Skokie, Ill. Own Forces. $490,000. 25 HOMES, NILES, ILL. A. J. DelBianco, 5501 Irving Park Ave., Chicago, Ill., archt.

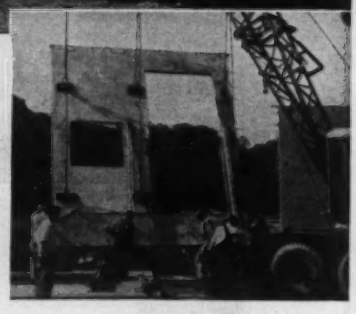
▲ **A. L. Salzman & Sons**, 35241 Peterson Rd., Chicago, Ill. Own Forces. $1,850,000. 115 HOMES, NORTHFIELD, ILL.

Wm. C. Kuhlman, 732 N. Cicero St., Chicago, Ill. CA $350,000. CONVENT and SCHOOL, NORTH RIVERSIDE, ILL. Materchristl Parish, 10 Ave. and 24 St., North Riverside, Ill. Belli & Belli, 8 S. Dearborn St., Chicago 3, Ill., archts. Awarded June 29.

J. J. Mangan, 9118 Ashland Ave., Chicago, Ill. Own Forces. $525,000. 25 HOMES, OAKLAWN, ILL.

continued on page 136





Why They Used Plastiment in Connecticut's "Lowest-Cost-for-Highest-Quality" School

Using tilt-up construction methods in this school at Woodbridge, Connecticut, the contractor steel-trowelled the Plastiment-concrete floor slab, coated it with a parting agent, and cast 120 6-inch-thick Plastiment-concrete wall panels directly on the floor surface.

When the panels were lifted for tilting, the sides next to the floor were as smooth as the floor slab itself. The panels were turned and the bottom side used for the exterior face. No steel-trowelling of the wall panels was needed, since Plastiment-concrete's uniform surface was absolutely free of cracks, pock-marks or blemishes of any kind. Uniform surface was doubly important here because of the delicate pink color of the panels.

While Plastiment contributes uniformity and crack resistance through low water/cement ratio and retarded set, it also gains strength faster than ordinary concrete after the initial retardation stage, enabling the contractor to tilt up the stronger Plastiment-concrete panels sooner than with ordinary concrete, without risk of damage to open door and window sections.

Total savings — one steel-trowelling operation, plus a saving in tilt-up time, in Connecticut's lowest-cost school to date.

For complete details on how Plastiment operates to produce a uniformly high quality concrete, send today for a copy of the illustrated booklet, "Plastiment Concrete Densifier."

Project: Bethany-Orange-Woodbridge Regional High School
Architect and Engineer: Fletcher-Thomson, Inc., Bridgeport, Conn. A. J. Hawley, Chief Engineer
Contractor: The Gellatly Construction Co.

Sika

PLASTIMENT CONCRETE DENSIFIER

SIKA Chemical Corporation, Passaic, New Jersey

DISTRICT OFFICES: PITTSBURGH, PHILADELPHIA, SALT LAKE CITY, DALLAS, MONTREAL, CHICAGO, BOSTON, WASHINGTON, D. C., PANAMA CITY, R.P. • DEALERS IN PRINCIPAL CITIES

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BILL BLAKE OF HODGSON-BLAKE, INC. maintains constant contact with every construction job, from his office—or his car—using General Electric 2-way radio.

WITH 2-WAY RADIO installed on his grader, foreman Carl Richardson supervises work crews while operating the grader, yet is never out of touch with manager Blake and the office.

"I drive less than half the miles, yet have far greater control over all my crews, all over the *county*, since installing our General Electric 2-way radio system," reports Bill Blake, Vice President of Hodgson-Blake, Inc. of Montgomery, Alabama. "With radio in my car, I am never out of reach either by my crew foremen, or the office."

Here is another big advantage of radio—when construction equipment breaks down, you can order repair parts instantly over the air! Men and equipment go back to work quicker, saving you money by reducing idle waiting time to a minimum. G-E 2-way radio performs dependably through emergencies—is engineered to withstand the severest tests of weather, dust or shock.

Thousands of users like Bill Blake have learned that G-E 2-way radio is built to last—every tube, every component designed for full time dependability. Write today for full details on the latest in 2-way radio design . . . G.E.'s new Progress Line. *General Electric Company, Section X2275-21 Communication Equipment, Electronics Park, Syracuse, N.Y.*

2-WAY MOBILE RADIO

FREQUENCY STABILITY & SELECTIVITY guaranteed for life!

Progress Is Our Most Important Product

GENERAL ELECTRIC

continued from page 134

Otto Luther & Co., 9453 S. Ashland St., Chicago, Ill., archts.

▲ Republic Constr. Co., 5270 Main St., Skokie, Ill. Own Forces. $1,000,000. 35 HOMES, Church and Grosse Pointe Rd. SKOKIE, ILL.

▲ Abell-Howe Co., 53 W. Jackson St., Chicago 4, Ill. CA $1,250,000. FACTORY, WHEELING, ILL. Ekco Foil Container Co., 1st Ave., River Grove, Ill. Awarded June 7.

J. P. Cullen & Son, Janesville, Wis., LB $878,484, general contract BIRGE HALL addn. and alterations, MADISON, WIS. University of Wisconsin, Madison, Wis. Law, Law, Potter & Nystrom, 121 S. Pinckney St., Madison, Wis., engrs. CD 1/7/54.

▲ Roberts & Brown, 6432 Cass St., Detroit, Mich. Owner Builds. $3,000,000. Kensington Farms, 250 brick HOMES Packard and Platt Rds., ANN ARBOR, MICH.

Orville Anderson, 18900 Fitzpatrick St., Detroit 28, Mich. Owner Builds. $130,000. 1 story, brick masonry WAREHOUSE, OFFICE space, Fitzpatrick St., DETROIT, MICH.

Radke & Jozwiack, 13665 Helen St., Detroit, Mich. Owner Builds. $93,000. die casting PLANT, Helen St., DETROIT, MICH.

▲ Bryant & Detwiler Co., 2110 Penobscot Bldg., Detroit, Mich. LB $3,832,000. underground GARAGE and 2 plazas, approach driveways in front of Henry and Edsel Ford Memorial Garage, DETROIT, MICH. City, Frank G. Schemanske, pres. Memorial Hall Comn., 151 W. Jefferson St., Detroit, Mich. Bids June 28. CD 6/3.

George W. Lathrop & Sons, Inc., 1510 Montcalm St., Toledo, O. CA Est. $500,000. 52,000 sq. ft. FACTORY addn., wire and cable PLANT addn., PORT HURON, MICH. Electric Auto-Lite Co., Champlain St., Toledo, O. Awarded June 30. CD 6/1.

▲ O. W. Burke Co., 1032 Fisher Bldg., Detroit, Mich. CA $4,102,214. 1 and 2 story HIGH SCHOOL, ROYAL OAK, MICH. City, Clarence Kimball, pres. Bd. Educ., 1026 N. Main St., Royal Oak, Mich. Bids June 17, awarded July 5. CD 7/7, under LB.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Minn., Minneapolis—BA 7/26—Hennepin Co., O. A. Pearson, budget and purch. agt., 130 Court House, grading, bit. surf., bridge constr. on SAR 146 about 1 mi. south of Long Lake near Minn. Western R.R. $85,000. L. P. Zimmerman, co. engr. CD 7/21.

† Ark., Jacksonville—TEST CELL—BA 7/28—U. S. Eng., 300 Broadway, Little Rock, Job. No. Little Rock AFB-55-ACRP-AF, jet engine test cell, Little Rock Air Force Base, ENG-03-050-56-2.

† Missouri—BA 7/28—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., pile dikes, revetment Missouri River Prunty to Fish Creek Bends, near Glasgow, Inv. 23-028-56-2. CD 6/28.

Tex., Kingsville—BA 7/28—City, G. G. Medders, mgr., WW. distr. sys.; 500,000 gal. elevated steel storage; 300,000 gal. ground concrete storage tank, pump station. $100,000. Plans deposit $20. J. M. Lloyd, 1620 S. Snead St., Tyler, engr. CD 5/31.

Tex., Kingsville—BA 7/28—City, G. G. Medders, mgr., sanitary sewer distr. lines. $75,000. Plans deposit $20. J. M. Lloyd, 1620 S. Sneed St., Tyler, engr. CD 5/31.

† Kan., Wichita—NOSE DOCK HEATING AND PARKING—BA On Or About 7/29—U. S. Eng., 911 Walnut St., Kansas City 6, Mo., nose dock heating and parking, McConnell Air Force Base, ENG-23-028-56-3. CD 2/2/51.

Minn., Alexandria—BA 8/1—City, C. I. Erickson, clk., sewage treatment plant addn. incl. sludge control bldg. sludge digestion tank, appurtenant piping, equip. $73,000. Plans deposit $10. Toltz, King & Day, 1509 Pioneer Bldg., St. Paul, engrs.

† Arizona and New Mexico—BA 8/2—Bureau Indian Affairs, Dpt. Interior, Box 931, Albuquerque, N. M. water supply Imprvs. at Kinnebito and Torreon, N. M. and Seba Delkai, Ariz., BU 603-351-12.

† Montana—BA 8/2—Bureau Reclamation, Dpt. Interior, Tiber Dam, clearing Tiber Reservoir area, Marias Division, Missouri River Basin Proj., Spec. 600C-171, L. N. McClellan, Bldg. 1A, Denver Federal Center, Denver, Colo., ch. engr. CD 7/30/45.

Tex., Benjamin—BA 8/2—Knox County Water Control & Imprvt. Dist. No. 1, City Hall, water supply line and appurtenances Contr. 1, 6 in. water supply line and appurtenances; Contr. 2, drilling and developing one water well; Contr. 3 steel ground storage tank; Contr. 4, furnish and install two well pumping units and electrical equip. $95,000. Plans deposit $25. Freese & Nichols, 407 Danciger Bldg., Fort Worth, consult engrs. CD 4/12.

† WYOMING—BA 8/2—U. S. Forest Service, Bldg. 85, Denver Federal Center, Denver, Colo.,

Albany and Carbon Counties—constr. Sand Lake Rd. No. 582, Medicine Bow National Forest.

† Tex., Ellington Air Force Base—TOWER—BA About 8/9—U. S. Eng., P. O. Box 1229, Galveston, exten. AC & W tower, ENG-41-243-56-1. $100,000.

† North Dakota—BA On Or About 8/16—U. S. Eng., Riverdale, road and parking area surf., Garrison Dam and Reservoir Proj. CIVENG-32-015-56-3.

† New Mexico—BA 8/23—Bureau Reclamation, Dpt. Interior, Box 252, Albuquerque, furnishing labor and materials for earthwork, clearing, structures for rehabiliation of drains, Unit AW-2, Middle Rio Grande Proj., near Albuquerque, Spec. DC-4467; adv. ENR 7/21. CD 9/4/44.

† Colo., Colorado Springs—RESERVOIRS—BA On Or About 9/1—Dpt. Air Force, Headquarters U. S. Air Force, Air Force Academy Constr. Agency, P. O. Box 1670, concrete water reservoir on United States Air Force Academy Site, Inv. No. (IFB) 05-613-55-6. Plans deposit $15. CD 8/5.

BUILDINGS—BA

† Minn., Minneapolis—BUILDING—BA 7/28—U. S. Eng., 1217 U. S. Post Office & Custom House, 180 E. Kellogg Blvd., St. Paul, Zone 1, pressure grouting of floor slabs in Bldg. 190 at Twin Cities Arsenal, ENG-21-018-55-18. CD 7/5.

Mo., Kirkwood (St. Louis 22 P. O.)—CHURCH EDUCATIONAL—BA 7/28—Kirkwood Methodist Church, John Craigo, pres. Church Bd., 345 N. Clay Ave., Zone 22, 3 story, brick, steel, rein.-con. church educational bldg., altering present church school annex, Washington and Clay Aves. Kenneth E. Wischmeyer, Bd. Educ. Bldg., 911 Locust St., St. Louis, Zone 1, archt.

Tex., Canyon—POWER PLANT—BA 7/29—Bd. Regents of State Teachers College of Texas, c/o West Texas State College, Canyon, power plant bldg. imprvs., repairs to sys. $100,000. Plans deposit $50. Macon O. Carder, 419 Fisk Bldg., Amarillo, archt. CD 10/5/45.

▲ Minn., Duluth—SCHOOL—BA 8/2—Bd. Educ., H. J. Forsberg, clk., 226 N. First Ave. E., elementary school, remodel West Junior High School, Central Ave. and West Sixth St. $1,100,000. Plans deposit $25, A. R. Melander, 603 Alworth Bldg., Duluth, archt. CD 6/17.

▲ Neb., Omaha—CHURCH—BA 8/2—First Methodist Church, 20 and Davenport Sts., church, 69 and Cass Sts. $1,000,000. Harold E. Wagoner, Architects Bldg., Phila., Pa., archt. CD 5/13/54.

Minn., Fulda—SCHOOL—BA 8/3—Bd. Educ., J. P. Tuseth, clk., high school, $344,000. Plans deposit $30. Haarstick, Lundgren & Assocs., N. 212 First National Bank Bldg., St. Paul, archts. CD 11/8.

Mo., St. Louis—SCHOOL—etc.—BA 8/4—St. Bridget's Catholic Parish, c/o Archdiocesan Bldg., Comn., Rev. James R. Hartnett, exec. secy., 3810 Lindell Blvd., Zone 8, school, rectory, convent, Jefferson Ave. and Stoddard St. Plans deposit $35 for all, mechanical only $20, Murphy & Mackey, 4746 McPherson Ave., Zone 8, archts.

Mo., Columbus—POWER PLANT—BA 8/9—Curators of University of Missouri, Dale O. Bowling, bus. mgr., 111 Jesse Hall, superstructure power plant, in connection with Medical and Surgical School, Burns & Roe, Inc., 233 Broadway, New York 7, N. Y., engr. CD 3/1/46.

▲ Mo., St. Louis—RESIDENCE and INFIRMARY—BA About 8/11—Masonic Grand Lodge of Missouri, c/o Lewis C. Robertson, supt. of Masonic Home of Missouri, 5351 Delmar Blvd., Zone 12, 10 story, bsmnt., brick, steel, rein.-con. residence and infirmary. $2,250,000, Kenneth E. Wischmeyer, Bd. Educ. Bldg., 911 Locust St., Zone 1, archt.

Kan., Hutchinson—SCHOOL—BA Latter Part September Or Eearly October—Bd. Educ., 2 Story, 42x608 ft. Junior High School, $750,000. Mann & Co., 201 E. 1 St., Hutchinson, archts. CD 6/7.

HEAVY CONSTRUCTION—LB & CA

MINNESOTA—State Hy. Dpt., 1246 University Ave., St. Paul,

C. Bolander & Sons Co., 2933 Pleasant Ave., Minneapolis, Minn. CA $774,332. c. conc., hot b. conc. surf., bridge in South St. Paul, Dakota Co. CD 6/29, under LB.

† G. I. Johnson & Son Co., 848 W. 79 St., Minneapolis, Minn. CA $725,159. constr. AFRTC facilities, incl. admin. and training bldg., warehouse, exterior facilities, drainage, access road, water and sewer services, elec. distr. Minneapolis-St. Paul International Airport, MINNEAPOLIS, MINN. U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Minn. CD 7/1, under LB.

R. M. Starry, Long Prairie, Minn. LB $80,420. grav. base, road-mixed bit. surf. 10.2 mi. between 2 mi. northwest of St. Martin and TH 237 in New Munich, 2 mi. between St. Martin and 2 mi. northwest, ST. CLOUD, MINN. Stearns Co., F. Ramler, aud., St. Cloud, Minn. Bids July 6. CD 6/16.

IOWA—State Hy. Comn., Ames,

Hargrave Constr. Co., 2424 Bever St. S.E., Cedar Rapids, Iowa, CA $706,777, c. conc. pavement widen. and b. conc. resurf. 20.051 mi. Proj. P-1067, Iowa and Johnson Counties. Bids June 28. CD 7/8, under LB.

† Costa Co., Inc., 315 W O W Bldg., Omaha, Neb. LB $376,560. constr., repair standard dikes, revetment Missouri River at Lower Cottier-Rulo Bends, near Craig, Inv. 25-066-55-151, MISSOURI. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids July 6. CD 6/23.

A. T. Utley Constr. Co., Cape Girardeau, Mo. CA $153,169, est. $174,544. (3 bidders). Rodney Vista sanitary trunk sewer sys., CAPE GIRARDEAU, MO. City, c/o City Council, City Hall, Cape Girardeau, Mo.

† Procurement Office, Grandview Air Force Base, Mo., rejected bids June 27, base post office, IFB 23-608-55-74, GRANDVIEW, MO. Will re-advertise. CD 6/7.

▲† Peter Kiewit Sons Co., 1024 Omaha Natl. Bank Bldg., Omaha, Neb., CA $3,643,338, airfield paving, grading, jet fuel storage, ENG-25-066-55-91, MINOT, N. D. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids June 21. CD 6/24, under LB.

NEBRASKA—State Dpt. Roads & Irrigation, Lincoln,

Neb.—Capital Bridge Co., 1001 N. 9 St., Lincoln, Neb. LB $189,629, subway, bridges, guard rail, FA-F-175 and 175 (7), Lincoln-Syracuse, Lancaster Co.;

Neb.—M. A. Nichols Constr. Co., Geneva, Neb., LB $123,709, culverts, Lincoln-Syracuse, FA-F-175 and 175 (7), Lancaster Co. Bids June 30. CD 6/21.

▲ NEBRASKA—State Dpt. Roads & Irrigation, Lincoln,

Neb.—Abel Constr. Co., 1815 "Y" St., Lincoln, Neb. LB $777,905, FA-U-508, Center Sect. of Lincoln Southwest Radial; LB $249,456, detour, guard rail, roadway, soil aggregate, shoulder, armor, bit. B. C. bit. mat., FA-S-338, Lincoln-Valparaiso, Lancaster Co.; LB $682,942, grav. paving roadside, FA-F-175 and 175 (7), Lincoln-Syracuse, Lancaster Co.;

Neb.—Bushman Constr. Co., 5 and Felix Sts., St. Joseph, Mo., LB $381,666, grading, paving, culvert, subway, FA-Sg-287 13th St., in Sidney, Cheyenne Co.;

Neb.—Dobson Bros. Constr. Co., 512 First Natl. Bank Bldg., Lincoln, Neb., LB $156,205, grading, paving, seeding, b. conc., FA-F-107, Ashland-Gretna, Sarpy Co.;

Neb.—Missouri Valley Constr. Co., Omaha Natl. Bank Bldg., Omaha, Neb., LB $639,861, grading, detour, paving culvert, seeding, bridges, guard rail, granular sub., soil aggregate, b. conc., FA-F-2 and S 448, Nebraska City-Auburn and Julian east; LB $149,955, grading, culvert, seal, bit. sand, asph. sd., FA-S-462, Hyannis Merriman, Grant Co.; LB $149,046, grading, culvert seal, bit. sand, asph. sd., FA-S-462 (2), Hyannis-Merriman, Cherry Co.;

Neb.—Norfolk Bridge & Constr. Co., Norfolk, Neb., LB $110,525, grading, seeding, guard rail, FA-F-286 and 494, Bristow-Verdel, Boyd Co.;

Neb.—Theisen Bros., Osmond, Neb., LB $119,791, grading, seeding, guard rail, FA-F-286 and 494, Bristow-Verdel, Boyd Co. Bids June 30. CD 6/21.

NEBRASKA—State Dpt. Roads & Irrigation, Lincoln,

Missouri Valley Constr. Co., Omaha Natl. Bank Bldg., Omaha, Neb., LB $161,883, paving, culverts, b. conc. pavement course on Third St. in Kimball, FA-S-590. Bids July 1. CD 6/21.

Geo. Sheaf Constr. Co., 20 W. 9 St., Kansas City, Mo. CA $740,639, est. $780,000. expansion of municipal WW, 4 new filtering units installed at Quindaro plant serving suburban Wyandotte Co., part of northeast Johnson Co., KANSAS CITY, KAN. City, City Hall, Kansas City, Kan. Bids June 29, awarded July 6. CD 6/22.

† Lufkin Constr. Co., Inc., Box 717, Lufkin, Tex., CA $740,987, multiple outlet hydrant refueling sys., Altus Air Force Base, ENG-34-066-55-119, ALTUS, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 2. CD 6/29, under LB.

Amis Constr. Co., 1647 Exchange Ave., Oklahoma City 8, Okla., LB $83,500, est. $90,000. taxiway and aprons at Municipal Airport, DUNCAN, OKLA. City, Duncan, Okla. CD 11/1.

† Secor Building Co., Inc., Box 3151, Oklahoma City, Okla., CA $510,000. hazardous test bldgs., Tinker Air Force Base, ENG-34-066-55-118, OKLAHOMA CITY, OKLA. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 29. CD 7/7, under LB.

† Roland L. Scherer, Weatherford, Tex., LB $73,478, est. $45,000, Inv. 94-55, floodwater retarding structures, Trinity River Watershed, Sites Nos. 9, 10, 11, Clear Fork of Trinity River, TEXAS. Soil Conservation Service, Dpt. Agriculture, Box 417, Temple, Tex. Bids June 30. CD 6/21.

TEXAS—State Hy. Comn., Austin,

cancelled bids to have been opened July 19, grading, structures, base, surf. 5.832 mi. Hy. FM 28 and FM 1441. Proj. S 2015 (1), etc. Crosby Co. CD 6/29.

Guadalupe Valley Electric Co-operative, Gonzales, Tex. Own Forces. $200.000. electric distr. lines, Gonzales, TEXAS. CD 12/30.

South Central Telephone Co-operative, Gonzales, Tex. Own Forces. $150,000. some rural pole telephone lines, Gonzales Co., TEXAS. CD 6/26/53.

▲ Brown & Root, Inc., 4100 Clinton Dr., Houston, Tex., CA furnish field supervision for 377 mi. 30 in. natural gas pipe line from Beaumont, Tex. through La. to Kosciusko, Miss.; two reciprocating compressor stations at Booth and Vidor, Tex., one at Holbrook, Pa.; electric motor driven centrifugal stations at Egypt, Miss., Mount Pleasant, Tenn. and Tompkinsville, Ky.; gas turbine centrifugal stations at Athens, O. and Owingsville, Ky.; addns. to stations at Kosciusko, Miss. and Danville, Ky., Barton, Ala., Gladeville, Tenn. and Wheelersburg and Berne, O.;

Houston Contg. Co., 2707 Ferndale St., Houston, Tex. CA Job No. 1, from point at Texas Eastern Transmission Corporation's compressor station near Beaumont, Tex. extending northeasterly approx. 59 mi. to point approx. 12 mi. east of DeQuincy, La.;

Tulsa Williams Co., National Bank of Tulsa Bldg., Tulsa, Okla., CA Job No. 2, from point approx. 12 mi. east of DeQuincy, La., extending northeasterly approx. 63 mi. to point approx. 10 mi. west of Opelousas, La.; CA Job No. 3, from point approx. 10 mi. west of Opelousas, La., extending northeasterly approx. 55 mi. to point on west side of Mississippi River approx. 5 mi. east of New Roads, La.;

H. C. Price Co., Bartlesville, Okla., CA Job No. 4, from east side of Mississipi River approx. 6 mi. east of New Roads, La., extending for approx. 65 mi. to point approx. 1 mi. west of Bude, Miss.; CA Job No. 5, from point approx. 1 mi. west of Bude, Miss., extending in northeasterly direction approx. 69 mi. to point approx. 2 mi. southeast of Clinton, Miss.;

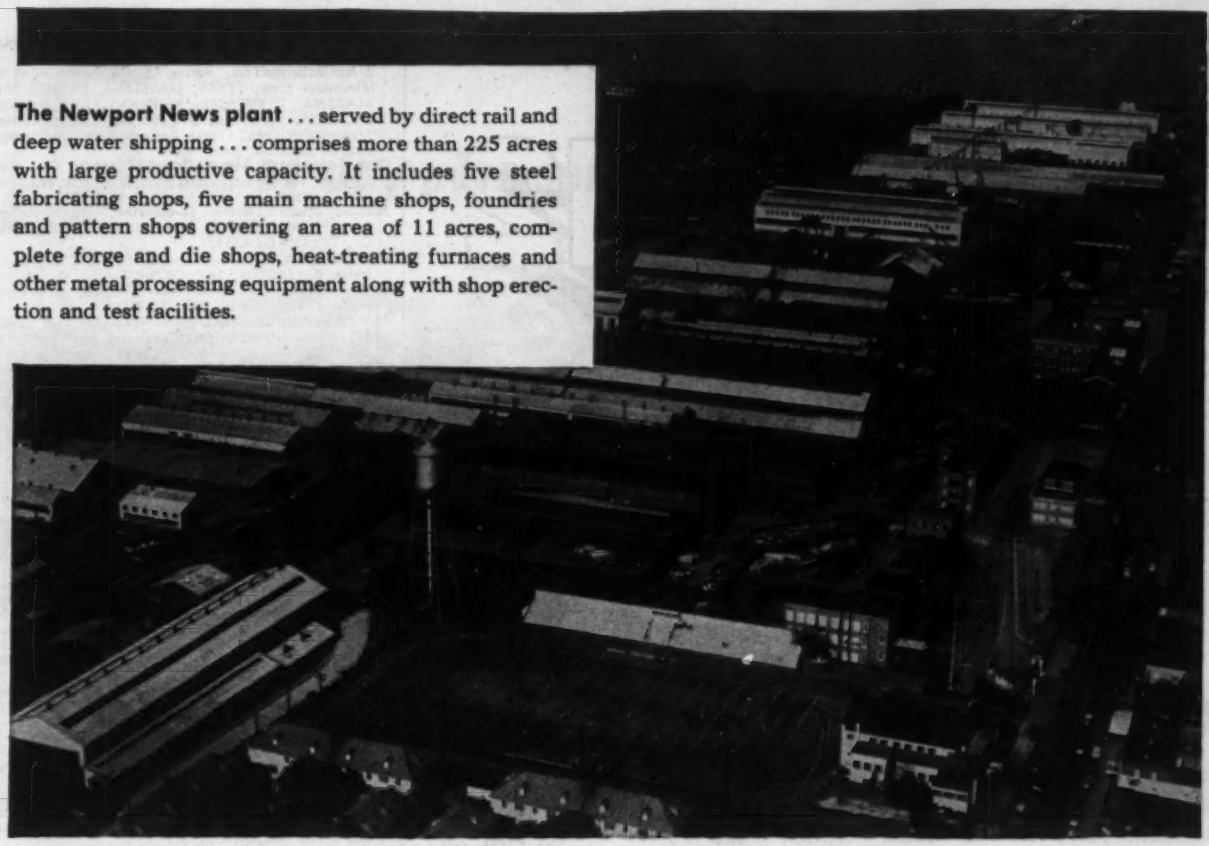
H. B. Zachry Co., Harding Blvd., San Antonio, Tex., CA Job No. 5, from point approx. 2 mi. southeast of Clinton, Miss., extending northeasterly approx. 64 mi. terminating at Texas Eastern Transmission Corporation's compressor station near Kosciusko, Miss.;

Pentzien, Inc., 1504 Dodge St., Omaha, Neb., CA river crossings at Neches River and Atchafalaya River;

Missouri Valley Dredging Co., 222 William St., Omaha,

continued on page 138

The Newport News plant . . . served by direct rail and deep water shipping . . . comprises more than 225 acres with large productive capacity. It includes five steel fabricating shops, five main machine shops, foundries and pattern shops covering an area of 11 acres, complete forge and die shops, heat-treating furnaces and other metal processing equipment along with shop erection and test facilities.



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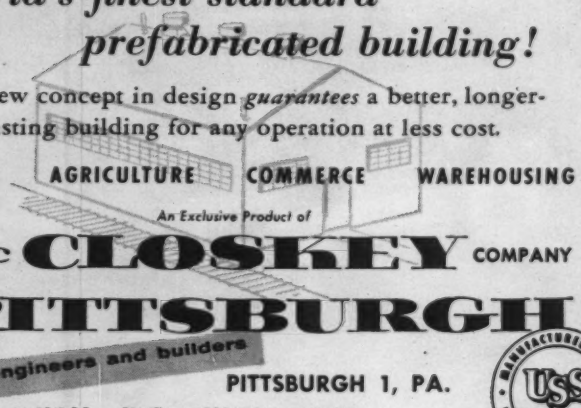

An Exclusive Product of

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MANUFACTURED FROM USS STEEL UNITED STATES STEEL

LUFKIN

"METALLIC" Woven Tape

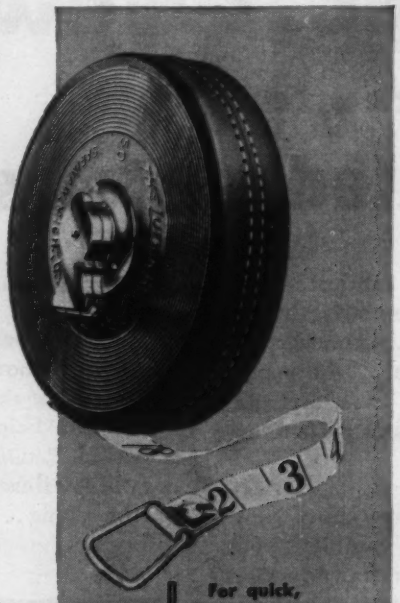
Rugged Service With Woven Tape Flexibility

Lighter and more flexible, the "METALLIC" is preferred by engineers in field work where steel tape accuracy is not required.

THE LINE has metallic strands interwoven with linen — increasing the strength, and reducing stretch and shrink to a minimum. Clear, plastic coating resists wear and soil. Has either standard or hook ring — first end of line reinforced with a red plastic strip. A patent threader permits removing and replacing of line, quickly and easily.

MARKINGS are large and clear. Graduations and inch or tenth figures are jet black; foot figures are bright red. Preceding foot figure appears in red at each inch or tenth of foot, reducing possibility of error. Available with markings in feet, inches, and quarter inches; or in feet, tenths, and half tenths.

DURABLE CASE is genuine leather, closely hand stitched over a rust resistant metal liner. Has bright, nickel plated fittings and folding rewind handle.



For quick, efficient service BUY LUFKIN TAPES • RULES PRECISION TOOLS FROM YOUR SUPPLY STORE

THE LUFKIN RULE COMPANY
SAGINAW, MICHIGAN
132-138 Lafayette St., New York City • Barrie, Ont.

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continued from page 136

Neb., CA river crossings at Sabine River and Bayou Courtableau;

J. Ray McDermott Co., Harvey, La., CA river crossing at Mississippi River, TEXAS, LOUISIANA, MISSISSIPPI, ALABAMA, TENNESSEE, KENTUCKY, OHIO, PENNSYLVANIA. Total est. $70,883,000. Texas Eastern Transmission Corp., Texas Eastern Bldg., Shreveport, La. CD 12/3/53, under Texas.

Rock Springs and Nueces Canyon Telephone Co., Rock Springs, Tex. Own Forces. $95,500, pole telephone lines, Edwards Co., TEXAS. CD 7/1.

Houston County Electric Co-operative, Crockett, Tex. Own Forces. $90,000, rural distr. lines, Houston Co., TEXAS. CD 4/13.

City, Arlington, Tex. Own Forces. $90,000, c.i. water mains, ARLINGTON, TEX. CD 9/17.

City, Arlington, Tex., Own Forces $78,500, some earth drainage, ARLINGTON, TEX. CD 9/17.

Maxwell Constr. Co., Box 504, Baytown, Tex., LB $298,579. two swimming pools and two pool bldgs. at Robert E. Lee and George W. Carver Schools, at Goose Creek, BAYTOWN, TEX. Goose Creek Independent School Dist., Box 40, Baytown, Tex. Bids June 30. CD 11/8/54, under Tex., Goose Creek.

E. L. Baker, 2300 Winton Terrace, Fort Worth, Tex. Own Forces. $90,000, industrial sites area grading and geenral earthwork, at Richland Park, FORT WORTH, TEX. CD 6/16.

City, City Hall, Fort Worth, Tex. Own Forces. $175,000, water c.i. distr. lines, FORT WORTH, TEX. CD 2/26/54.

City, City Hall, Fort Worth, Tex. Own Forces. $200,000. sanitary sewer collection lines, FORT WORTH, TEX. CD 2/1/54.

Texas Gulf Constr. Co., Box 661, Houston, Tex., LB $418,920, est. $200,000. constr. Pier 40, repairing and imprv. related work, GALVESTON, TEX. Galveston Wharves, 2402 Avenue G, Galveston, Tex. Bids June 30.

International Estates Subdivision, c/o R. W. Baxter, Rio Grande Natl. Bldg., Dallas, Tex. Own Forces. $47,500, c.i. water lines, facilities, GRAND PRAIRIE, TEX.

International Estates Subdivision, c/o R. W. Baxter, Rio Grand Natl. Bldg., Dallas, Tex. Own Forces. $75,000, natural gas lines, GRAND PRAIRIE, TEX.

International Estates Subdivision, c/o R. W. Baxter, Rio Grande Natl. Bldg., Dallas, Tex. Own Forces. $45,000, bldg. site area earthwork, grading, GRAND PRAIRIE, TEX.

International Estates Subdivision, c/o R. W. Baxter, Rio Grande Natl. Bldg., Dallas, Tex. Own Forces. $78,000, constr., asph. paving new streets, concrete curb and gutter, GRAND PRAIRIE, TEX.

International Estates Subdivision, c/o R. W. Baxter, Rio Grande Natl. Bldg., Dallas, Tex. Own Forces. $78,000, sanitary sewer collection lines; $75,000, storm sewers, GRAND PRAIRIE, TEX. CD 6/2.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. CA $175,000, hard paved auto parking center, HOUSTON, TEX. Gulfgate Corp., c/o Theo. W. Berenson, Bankers Mortgage Bldg., Houston, Tex. CD 4/1.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. CA $81,000, outside lighting sys., HOUSTON, TEX. Gulfgate Corp., c/o Theo. W. Berenson, Bankers Mortgage Bldg., Houston, Tex.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. CA $79,000, sanitary sewerage sys., CA $75,000, storm sewers, HOUSTON, TEX. Gulfgate Corp., c/o Theo. W. Berenson, Bankers Mortgage Bldg., Houston, Tex.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex., CA $118,500, general earthwork, grading, filling, leveling in portion of bldg. zone, HOUSTON, TEX. Gulfgate Corp., c/o Theo. W. Berenson, Bankers Mortgage Bldg., Houston, Tex. CD 4/1.

Farnsworth & Chambers Co., Inc., Box 74, Houston, Tex. CA $47,500, water sys. HOUSTON, TEX. Gulfgate Corp., c/o Theo. W. Berenson, Bankers Mortgage Bldg., Houston, Tex.

Link Road Shopping Center, c/o Emma Levy, Shamrock-Hilton Hotel, Houston, Tex. Own Forces. $50,000. earthwork, drainage, grading for Shopping Center Units 1 and 2, HOUSTON, TEX.

Link Road Shopping Center, c/o Emma Levy, Shamrock-Hilton Hotel, Houston, Tex. Own Forces. $75,000, hard type paving in areas 1 and 2 of shopping centers; $90,000, hard type paving for 1,200-auto parking center, HOUSTON, TEX. CD 6/8.

Link Road Shopping Center, c/o Emma Levy, Shamrock-Hilton Hotel, Houston, Tex. Own Forces. $75,000, floodlighting shopping center Units 1 and 2, HOUSTON, TEX.

O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CA $75,000, asphalt paved streets, concrete curb and gutter, JACINTO CITY, TEX. J. B. Belin, pres., State-Wide Lumber Co., 4120 Lyons St., and O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CD 7/21/55.

O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CA $80,000, sanitary sewers; CA $76,185, storm sewers, JACINTO CITY, TEX. J. B. Belin, pres., State-Wide Lumber Co., 4120 Lyons St., and O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CD 6/6.

O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CA $48,000. bldg. site area earthwork, grading, JACINTO CITY, TEX. J. B. Belin, pres. State-Wide Lumber Co., 4120 Lyons St. and O. R. Winter, 2406 S. MacGregor St., Houston, Tex.

O. R. Winter, 2406 S. MacGregor St., Houston, Tex. CA $48,100, c.i. water lines, JACINTO CITY, TEX. J. B. Belin, pres. State-Wide Lumber Co., 4120 Lyons St., and O. R. Winter, 2406 S. MacGregor St., Houston, Tex.

City, Lubbock, Tex. Own Forces. $55,100. 8 and 12 in. c.i. water line exten., LUBBOCK, TEX. W. B. Holmes, Lubbock, Tex., city engr. CD 6/28.

continued on page 141

5 miles of clay pipe serves the new automotive assembly plant

Ford Motor Company's new assembly plant at Louisville, Ky., will be sewered and drained by Vitrified Clay Pipe in sizes from four to 36 inches. Installation is under the direction of Ford's resident engineer, A. M. Seward. General contractors are Huber, Hunt and Nichols. Sewer contractor is the F. S. Oldt Company, with W. E. Thompson, superintendent, and Lamar Cunningham, engineer on the project.

CLAY PIPE FITTINGS MAKE INSTALLATION EASY

A complete line of fittings solves every Clay Pipe installation problem. This T Saddle, for example, permits additional feeder lines to be connected into trunk lines of equal or larger diameter. Simply make an opening in the trunk line, insert the spigot end of the T Saddle, and seal the joint with mortar or bituminous jointing compound.

In new industrial plants going up all over the country, where sewerage lines *must* be dependable, you'll find Clay Pipe on the job. Installed in the ground beneath equipment that can't be moved, Clay Pipe is the *one* pipe that's sure to give trouble-free service year after year. Heavy surface loads can't cause Clay Pipe to "oval" or squash out. Scalding hot waste can't soften it. Corrosive industrial chemicals can't weaken it. That's why Clay Pipe is guaranteed—barrel, bell, and spigot—for 50 years!

Vitrified CLAY PIPE

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1520 18th St. N.W., Washington 6, D. C.

206 Connally Bldg., Atlanta 3, Ga.
100 N. LaSalle St., Rm. 2100, Chicago 2, Ill.
703 Ninth & Hill Bldg., Los Angeles 15, Calif.
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C-655-1

LIGHT, RUGGED AMSCO® DIPPERS deliver more loads per shift

The all-cast Amsco dipper is made of the toughest steel known . . . manganese steel. Amsco dippers withstand rough handling, sharp impact and grating abrasion because of this same sturdy construction. And all dipper segments are plug-welded together, adding strength without increasing weight.

Notice the raked design . . . those sharp, fanned teeth bite out a capacity load every time. Dumping is instantaneous, because the dipper bottom has a larger opening than its top. And there are no snagging edges or cavities on the interior to collect clods and lower loading capacity.

Specify these light, rugged, Amsco dippers to get more bite and higher loading into the working end of your dipper sticks. You'll get more digging done in less time at no increase in power load. Specify Amsco manganese steel, too, for other parts that must be *extra tough*.

AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION

Chicago Heights, Ill.

continued from page 138

E & R Lumber Co., 2726 Texas Ave., Lubbock, Tex. Own Forces. $75,000, natural gas lines, LUBBOCK, TEX.

E & R Lumber Co., 2726 Texas Ave., Lubbock, Tex. Own Forces. $49,600, earthwork, grading for bldg. tract, LUBBOCK, TEX.

E & R Lumber Co., 2726 Texas Ave., Lubbock, Tex. Own Forces. $80,000, concrete paved streets, curb and gutter, LUBBOCK, TEX.

E & R Lumber Co., 2726 Texas Ave., Lubbock, Tex. Own Forces. $50,000, c.i. water lines, LUBBOCK, TEX.

E & R Lumber Co., 2726 Texas Ave., Lubbock, Tex Own Forces. $75,000, storm sewers; $80,000, sanitary sewer collection lines, LUBBOCK, TEX. CD 6/6

City, Overton, Tex. Own Forces. $75,000 park expansion $75,000, 9-hole golf course, OVERTON, TEX. CD 6/2

Bob Davis, Developer, 3526 Merrick St., Houston, Tex CA $75,000, asphalt paved streets, concrete cur and gutter, PASADENA, TEX. Bob Davis, 352 Merrick St., Houston, Tex.

Bob Davis, Developer, 3526 Merrick St., Houston, Tex CA $90,000, sanitary-storm sewers, PASADENA, TEX. Bob Davis, 3526 Merrick St., Houston, Tex.

John G. Holland Constr. Co., 1602 Old Spanish Trail, Houston, Tex., CA $51,218, c.i. water lines, facilities, PASADENA, TEX. Wm. D. Morse, c/o Morse Wholesale, 3302 Canal St., Houston, Tex.

Parkwood Addition, c/o C. O. Beeler, 4715 Calhoun St., Houston, Tex. Own Forces. $75,000, storm sewers; $75,000, sanitary sewers, PASADENA, TEX. CD 6/6.

Parkwood Addition, c/o C. O. Beeler, 4715 Calhoun St., Houston, Tex. Own Forces. $85,000, concrete paved streets concrete curb and gutter, PASADENA, TEX.

John G. Holland Constr. Co., 1602 Old Spanish Trail, Houston, Tex., CA $79,100, sanitary sewers; CA $75,000, storm sewers, PASADENA, TEX. Wm. D. Morse c/o Morse Wholesale, 3302 Canal St., Houston, Tex. CD 6/6.

Parkwood Addition, c/o C. O. Beeler, 4715 Calhoun St., Houston, Tex. Own Forces. $48,000. bldg. site area earthwork, grading, PASADENA, TEX.

Parkwood Addition, c/o C. O. Beeler, 4715 Calhoun St., Houston, Tex. Own Forces. $45,000. c.i. water lines, PASADENA, TEX.

† **John Meents Constr. Co.**, Rte 10, Box 286-E, San Antonio, Tex., LB $109,479, instrument landing assistance sys., Inv. 41-606-55-53, RANDOLPH AIR FORCE BASE, TEX. U. S. Gove., c/o Base Procurment, Box 205, Randolph Field, Tex. Bids July 6.

Texas Power & Light Co., Fidelity Union Life Bldg., Dallas, Tex. Own Forces. $85,000, above-ground electric lighting in industrial area—bordering expressway, RICHARDSON, TEX.

Colglazier & Hoff, 325 Seguin Rd., San Antonio, Tex. CA $78,365, hard paved streets, concrete curb and gutter, SAN ANTONIO, TEX. Col. B. F. Chadwick, 205 Crescent St., San Antonio, Tex.

Colglazier & Hoff, 326 Seguin Rd., San Antonio, Tex. CA $51,000, c.i. water lines, faciilties, SAN ANTONIO, TEX. Col. B. F. Chadwick, 205 Crescent St., San Antonio, Tex.

Colglazier & Hoff, 326 Seguin Rd., San Antonio, Tex. CA $77,215, sanitary sewer collection lines; CA $76,200, storm sewers, SAN ANTONIO, TEX. B. F. Chadwick, 205 Crescent St., San Antonio, Tex. CD 6/6.

Orts Constr. Co., 939 Rittiman Rd., San Antonio, Tex. Owner Builds. $75,000, storm sewers; $75,000, sanitary sewer collection lines, SAN ANTONIO, TEX. CD 6/9.

Orts Constr. Co., 939 Rittiman Rd., San Antonio, Tex. Owner Builds. $80,000, constr., asph. paving new streets, concrete curb and gutter, SAN ANTONIO, TEX.

Orts Constr. Co., 939 Rittiman Rd., San Antonio, Tex. Owner Builds. $50,000, water lines, facilities, SAN ANTONIO, TEX.

San Augustine Co., San Augustine, Tex. Own Forces. $100,000, new road work, SAN AUGUSTINE, TEX. CD 1/3.

City, San Marcos, Tex. Own Forces. $75,000. municipal park imprvs., SAN MARCOS, TEX. CD 10/6.

Bailey & Evans Realty Co. & Assocs., 9501 Chocolate Bayou, Houston, Tex. Day Labor. $95,500, summe resort, incl. swimming pool, playgrounds, club house recreation facilities, comfort station, near SARGENT TEX. CD 2/18.

† **C. H. Cheney**, 5015 Mockingbird Lane, Dallas, Tex. LB $161,179, est. $90,000. ammunition storage facilities, Perrin Air Force Base, ENG-34-066-55-127, SHERMAN, TEX. U. S. Eng., Box 61, Tulsa 2, Okla. Bids June 29. CD 6/14.

City, Sherman, Tex. cancelled bids to have been opened July 6, sanitary sewerage sys. imprvs. SHERMAN, TEX. Est. $150,000. Will re-advertise. CD 6/23.

WYOMING—State Hy. Comn., Cheyenne,
rejected bids June 30, base, plant mixed surf. course, sand-grav. seal coat and misc. work 5.053 mi. Big Piney-West Rd., 2 Cattleguards, one north and one south of Big Piney, Proj. No. S-98 (1) and State 4089 Comb., Sublette Co. LB $357,582. CD 6/24.

▲ **WYOMING**—State Hy. Comn., Cheyenne,
Wyo.—**Colorado Constructors. Inc.**, 725 W. 29 Ave., Denver, Colo., CA $377,946, grade, drain, base, surf. tr. one rein.-con. culvert, two M. P. C. M. pipe culverts; one overhead structure over U.P.R.R. tracks and misc. work 6.999 mi. Laramie-Fort Collins Colo. Rd., Proj. No. F-92 (7), Albany Co.;
Wyo.—**Inland Constr. Co.**, 3867 Leavenworth St., Omaha, Neb., CA $330,466, grade, drain, base, surf. tr., one 5 cont. rein.-con. slab span bridge; one rein.-con. culvert; two M.P.C.M. pipe culverts, misc. work 4.962 mi. Worland Thermopolis Rd. Proj. No. F-0171 (2), Washakie Co.;

(*Advertisement*)

THE IMMENSITY of the Los Angeles County Sewer system project is accentuated by comparison of workmen with 144 inch diameter concrete pipe.

Vibration Important Feature in Production of 144 Inch Concrete Pipe

• **Los Angeles installation**—The expansion of facilities of the County Sanitation Districts of Los Angeles necessitated installation of 7800 feet of 12 foot diameter reinforced concrete pipe. The pipe is 12 feet in length with tongue and groove joints and with a shell thickness of 12 inches. The pipe sections weigh about 39 tons per length.

• **Manufactured at plant**—Reinforcing consisted of a double cage, one of which was elliptical in shape. Cages were manufactured at the plant site and the circumferential reinforcement welded to the longitudinal bars. The cages were dropped over the inner form and held in place by appropriate spars. The outer form was then placed, and the job was poured in the usual manner.

• **Tests made**—United Concrete Pipe Corporation used three Model PX Vibrators on steel forms specially constructed to eliminate leakage of grout or water. Tests made of concrete in these pipes show high strengths, as much as 7000 pounds per square inch not being uncommon.

• **An interesting manual**—on "How to Apply, Operate and Maintain EXTERNAL VIBRATORS in the MANUFACTURE of CONCRETE PIPE" can be obtained by writing Viber Company, Burbank, California.

• **For further information**—on Viber's complete line of internal and external vibrators, contact your authorized distributor, or Viber Company, Dept. 76, 726 South Flower Street, Burbank, California.

CONTROLLED HIGH SPEED external vibration with Viber Model PX vibrator produces smoother finished surface inside and out. High strengths obtained in this pipe would have been impossible without vibration.

VIBER

CONCRETE VIBRATORS SINCE 1931

Wyo.—**Jones, Hinckley & Jones, Inc.,** Powell, Wyo., CA $351,779, est. $328,507, base, road mix, oil, sand-gravel seal coat, two bridges, one 3 cont. rein.-con. slab spans and one consisting of 3 cont. WF girder spans and misc. work 6.752 mi. Greybull-Shell Rd., Proj. No. S-250 (6), Big Horn Co.;

Wyo.—**Knisely-Moore Co.,** Douglas, Wyo., CA $204,764, est. $237,459, plant mixed surf. course, sand-grav. seal coat 7.831 mi. Lingle-Torrington Rd. and base, plant mix, sand-gravel sealcoat, and misc. work 4.765 mi. of Lusk-Lingle Rd., Proj. No. F-37 (3), surf. contr. and F-150 (10) Unit II comb., Groshen Co.;

Wyo.—**Etlin E. Peterson,** Casper, Wyo., CA $367,880, est. $356,897, base, sand-gravel seal coat, one 4-cont. rein.-con. slab span bridge, 1-3 cont. WF girder span overhead crossing and misc. work 3.398 mi. of Gillette-Morecroft Rd. Proj. No. IN-120 (10), Campbell Co.;

Wyo.—**Read Constr. Co.,** 706 W. 19 St., Cheyenne, Wyo., CA $569,635, est. $602,742, base, plant mix surf course, sand-grav. seal coat; 2 M.P.C.M. pipe culverts and misc. work 6.298 mi. Cheyenne-Greeley Colo. Rd., Proj. F-73 (7), Laramie Co.;

Wyo.—**Yellowstone Contr. Co.,** Cheyenne, Wyo., CA $158,028, est. $155,229, base, plant mixed surf. course, sand-grav., seal coat and misc. work 6.937 mi. Dubois-Diversion Dam Rd., Proj. F-127 (5) Fremont Co. Grand total $2,360,498. Bids June 30, awarded July 1. CD 6/24.

Rognstad-Olsen Constr. Co., 1233 E. "C" St., Casper, Wyo., CA $294,000, general constr. airport terminal, CASPER, WYO. Bd. Comsr. Natrona Co. Court House, Casper, Wyo. Bids June 30. CD 6/24.

▲† **Campbell & Kay,** Box 836, Tyler, Tex. CA $1,586,861, six airmen's dormitories, Holloman Air Development Center, ALAMOGORDO, N. M. U. S. Eng., Box 1538, Albuqerque, N. M. CD 6/22, under LB.

BUILDINGS—LB & CA

Kraus-Anderson, Inc., 501 S. Eighth St., Minneapolis, Minn. CA $175,000. general contract 1 story, 140x240 ft. truck TERMINAL, MINNEAPOLIS, MINN. Acme Constr. Co., 2508 Kennedy St. N. E., Minneapolis, Minn. B. Mayeron, St. Louis Park, Minn., engr.

Bd. Educ., T. Giefer, clk., Nicollet, Minn., rejected bids June 30, school addn., NICOLLET, MINN. $344,000. Will re-advertise. CD 6/8.

Fairbanks, Morse & Co., 9 and Harney Sts., Omaha, Neb., CA $227,130, diesel engine GENERATING UNIT, exciter, generator, auxiliaries and appurtenances, etc., ORANGE CITY, IOWA. City, Anthony Hassels, clk., Orange City, Iowa. Bids June 27.

▲ **Stanton Constr. Co.,** 1012 Baltimore St., Kansas City, Mo. Owner Builds. $1,000,000. Industrial WAREHOUSES, 4400 E. Gardner St., KANSAS CITY, MO. Robert Jackson, c/o owner, archt.

Wm. H. Nelson Cunliff Co., 3320 Lindell Blvd., St. Louis 3, Mo. CA Est. $100,000. 1 story, 105x120 ft., brick, steel, concrete WAREHOUSE and SALES OFFICE 2721 Washington Ave., ST. LOUIS, MO. Nieman Bearing Co., c/o Carl H. Nieman, 2833 Locust St., St. Louis, Mo. Fred S. McNeill, 3320 Locust St., St. Louis 3, Mo., archt.

▲† **Martin K. Eby Constr. Co., Inc.,** 610 N. Main St., Witchita, Kan. CA $5,483,816. HOSPITAL, Inv. 23-028-55-89, FORT RILEY, KAN. U. S. Eng., Federal Office Bldg., Kansas City, Mo. CD 6/28, under LB.

Coffeyville Memorial Hospital, Coffeyville, Kan., rejected bids June 28, hospital addn., COFFEYVILLE, KAN. Will re-advertise. CD 6/6.

Chalmers & Borton, Hutchison, Kan. CA $250,000. GRAIN TERMINAL, HUGOTON, KAN. Security Elevator Co., Hutchison, Kan.

▲ **Overland Park, Inc.,** 7315 W. 80 St., Overland Park, Kan. Owner Builds. $1,000,000. HOUSING, Quivera Rd. and Hy. 50, OVERLAND PARK, KAN. Elswood, Smith & Carlson, Mission, Kan., archts.

Busboom & Rauh, Salina, Kan. CA $386,500. general contract combined grade and high SCHOOL, PAWNEE ROCK, KAN. Barton-Pawnee Joint School Dist. and Barton-Pawnee Joint Common School Dist. 2, Pawnee Rock, Kan. Bids June 29. CD 6/21.

Charles T. Hughes Constr. Co., 1225 Linwood Ave., Oklahoma City 4, Okla., CA Est. $600,000. 200x400 ft. WAREHOUSE, N. E. 16 and Santa Fe Sts., OKLAHOMA CITY, OKLA. Sears Roebuck & Co., 925 S. Homan St., Chicago, Ill. George L. Dahl, 2101 N. St. Paul St., Dallas, Tex., archt. Awarded June 22.

Andrews Enterprises, c/o M. C. Andrews, E. Main St., Grand Prairie, Tex., CA $365,000, 22 DWELLINGS; CA $375,000, SHOPPING CENTER, ARLINGTON, TEX. M. C. Andrews, Jr., E. Main St., Grand Prairie, Tex. CD 4/15.

Roselawn Oaks, c/o Herman Z. & Z. H. Kuehn & Assocs., 4713 N. Shepherd St., Houston, Tex. Own Forces. $375,000, 18 DWELLINGS; $365,000, 12 DWELLINGS, BAYTOWN, TEX. CD 5/11.

C. S. Lambie & Co., Box 1167, Amarillo, Tex., LB $431,317, est. $425,000 2 story, bsmnt. HOSPITAL, BORGER, TEX. North Plains Hospital, Borger, Tex. Bids July 1. CD 6/29.

Vernon & James Smith, 2151 Fort Worth Ave., Dallas, Tex. Owner Builds. $355,000. 24 DWELLINGS, DALLAS, TEX. Thomas A. Russ, 808 Ryan Rd., Dallas, Tex. archt. CD 6/10.

O'Rourke Constr. Co., Box 5384, Dallas, Tex., CA $818,800, 8 story MOTOR BANK addn., remodeling, DALLAS, TEX. First National Motor Bank, 1401 Elm St., Dallas, Tex. Bids May 10. CD 4/21.

Burnett & Hervey, Box 502, El Paso, Tex. Own Forces. $358,100, 28 addnl. DWELLINGS, EL PASO, TEX. CD 6/2.

Holiday Homes, c/o L. Blackman, Box 23, Mineral Wells, Tex. Owner Builds. $364,000, 24 DWELLINGS, EL PASO, TEX. CD 6/6.

Hines Builders, Inc., 2021 E. Main St., Grand Prairie, Tex. Own Forces. $355,000, 28 DWELLINGS; $368,500, 35 DWELLINGS, FARMERS BRANCH, TEX. CD 6/3.

Lewis & Lamberth, 3918 Gaston St., Dallas, Tex. Owner builds. $345,000, 30 DWELLINGS; $365,000, 22 DWELLINGS, FARMERS BRANCH, TEX. CD 6/2.

Childs Constr. Co., 2716 E. Lancaster St., Fort Worth, Tex. LB $418,600, est. $250,000. OFFICE, FORT WORTH, Tex. Rowan Oil Co., Fair Bldg., Fort Worth, Tex. Bids June 30. CD 6/15.

Henry A. Young, 419 W. 7th St., Fort Worth, Tex. Purchase and Hire. $350,000. 36 DWELLINGS, FORT WORTH, TEX. CD 6/2.

Standard Sulphur Co., C. B. Ebard, Sr., Rosenberg, Tex., Own Forces. $975,000. sulphur mining PLANT, at Allen Dome area, 10 mi. west, FREEPORT, TEX. CD 12/15.

Woodlawn Acres, Sec. 7, Galena Park, Tex., Day Labor. $400,000. 40 HOMES, GALENA PARK, TEX. CD 6/6.

Elton Brimberry, Contr., 4363 Rosslyn St., Houston, Tex. CA $369,000, 32 DWELLINGS, HOUSTON, TEX. Elton Brimberry, 4363 Rosslyn St., Houston, Tex.

Centex Constr. Co., 4606 Greenville St., Dallas, Tex. Owner Builds. $363,400, 33 APARTMENT units, HOUSTON, TEX. CD 8/11.

Hub Lumber Co., 5519 Lawndale St., Houston, Tex. Own Forces. $365,000. 30 DWELLINGS, $356,000. 25 DWELLINGS, HOUSTON, TEX. CD 6/6.

Armco Drainage & Metal Products, Inc., C & I Life Bldg., Houston, Tex., CA $91,000. WAREHOUSE, HOUSTON, TEX. Merchants Fast Motor Lines, Inc., 2201 Congress St., Houston, Tex. CD 3/11.

Robert W. Kurtz & Co., Building Contr., 2126 Welch St., Houston, Tex., CA $514,120, STORE, OFFICE, HOUSTON, TEX. M. Echols, Commerce Bldg., Houston, Tex. CD 6/6.

H. G. Copeland Constr. Co., 5117 Gulfton St., Houston, Tex., CA $200,000. 150x300 ft. WAREHOUSE, Clinton Dr. and Ida St., HOUSTON, TEX. Southwer Warehouse Co., 4410 Clinton Dr., Houston, Tex. Gabert & Wisdom, 1315 Bell St., Houston, Tex., archts.

Carlton Co., c/o Carl Hensley, 3304 24 St., Lubbock, Tex. Owner Builds. $367,115, 20 DWELLINGS; $350,000, 16 DWELLINGS, LUBBOCK, TEX. CD 6/6.

▲ **Frank Nick & O. L. Nelms,** 112 E. 12 St., Dallas, Tex. Owner Builds. $365,000, 22 DWELLINGS; $373,185, 28 DWELLINGS; $381,000, 34 DWELLINGS, MESQUITE, TEX. Grand total $1,119,185. CD 5/26.

Joe Danna Constr. Co., 4922 Greenville St., Dallas, Tex. Owner Builds. $368,515, 32 DWELLINGS; $345,750, 27 DWELLINGS, MESQUITE, TEX. CD 6/2.

C. L. Cunningham, 2402 W. Walls St., Midland, Tex. Force Account. $382,200, 38 DWELLINGS, MIDLAND, TEX. CD 6/13.

C. L. Cunningham, 2404 W. WALLS St., Midland, Tex. Force Account, $367,600, 32 DWELLINGS, MIDLAND, TEX. CD 6/14.

Witeside & Bassett, 107 E. 21 St., Odessa, Tex. Own Forces. $363,000, 32 DWELLINGS, ODESSA, TEX. CD 6/16.

Wm. D. Morse, c/o Morse Wholesale, 3302 Canal St., Houston, Tex. Own Forces. $350,000, (A) 35 DWELLINGS; $389,750, (B) 41 DWELLINGS, PASADENA, TEX. CD 6/6.

C. O. Beeler Interests, 4715 Calhoun St., Houston, Tex. CA $371,615, Job 1, 40 DWELLINGS; CA $363,000, Job 2, 37 DWELLINGS, PASADENA, TEX. Parkwood Subdivision, c/o C. O. Beeler, 4715 Calhoun St., Houston, Tex. CD 6/6.

Frank Basenberg, 769 E. Ashby St., San Antonio, Tex. Owner Builds. $372,125, 32 DWELLINGS, SAN ANTONIO, TEX. CD 5/24.

Orts Constr. Co., 939 Rittiman Rd., San Antonio, Tex. Owner Builds. $364,925, 25 DWELLINGS; $380,600, 31 DWELLINGS, SAN ANTONIO, TEX. CD 6/9.

▲ **W. S. Bellows Constr. Co.,** 716 N. Everton St., Houston, Tex., CA $1,115,000. addnl. sect. SHOPPING CENTER, SPRING BRANCH, TEX. Spring Branch Shopping Center, c/o G. R. Jackson, trustee, 2017 W. Gray St., Houston, Tex. CD 7/12.

▲† **King Constr. Co.,** 311 Texarkana Natl. Bank Bldg. Texarkana, Tex., CA $1,163,796, ammunition maintenance facilities, Red River Arsenal, Inv. No. ENG-34-066-55-102., TEXARKANA, TEX., U. S. Eng., Box 61, Tulsa 2, Okla. Bids May 25. CD 6/15, under Lb.

Farnsworth & Co., Box 74, Houston, Tex., CA $695,000. Phase 2, polyethylene PLANT, TEXAS CITY, TEX. Monsanto Chemical Co., Texas City, Tex. M. F. Gigliotti, c/o owner, field proj. engr. CD 11/18/53.

Standard Homes, Inc., 4208 Sondra St. Witchita Falls, Tex. Owner Builds. $355,500. 29 DWELLINGS, WICHITA FALLS, TEX. CD 6/14.

B. H. Baker, Inc., Box 173, Colorado Springs, Colo., LB $749,581, general constr. 3 story DORMITORY, COLORADO SPRINGS, COLO. Colorado College, Colorado Springs, Colo. Bids June 29. CD 6/13.

R. F. Ball Co., 4541 Newland St., Wheat Ridge, Colo., CA $723,000, general constr. 2 story brick Francis R. Doull SCHOOL, W. Harvard Ave. and S. Utica St., DENVER, COLO. School Dist. No. 1, 414 14th St., Denver, Colo. Bids June 22, awarded June 30. CD 7/1 under LB.

FAR WEST

HEAVY CONSTRUCTION—BA

† **Ore., Klamath Falls**—UTILITIES—BA 7/29—P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash., sewer, water and electrical sys. addns. at Air Force Base, new steam heating distr. sys. Spc. 44475. Plans deposit $40. CD 3/14.

BUILDINGS—BA

▲ **Calif., Azusa** — HIGH SCHOOL — BA 8/1 — Citrus Union High School Dist., 18824 E. Foothill Blvd., high school. $1,000,000. Neptune & Thomas, 1560 W. Colorado St., Pasadena, archts. CD 9/28.

BUILDINGS—SLC

▲ **Calif., Arcadia**—HOSPITAL—Hospital Foundation of the Methodist Church, 2826 S. Hope St., Los Angeles, soon lets contract 3 and 4 story, rein-con. hospital. $2,000,000. Neptune & Thomas, 1560 W. Colorado St., Pasadena, archts. CD 10/2/53.

Calif., Long Beach—FACTORY—Paper Products, Inc., 4423 Fruitland Ave., Vernon, soon lets contract 40,000 sq. ft. paper products factory. $200,000. Quinton Engineers, Ltd., 812 W. 8th St., Los Angeles, engrs.

▲ **Calif., Palo Alto**—SHOPPING CENTER—Owner, c/o Stedman & Williams, archts., 541 Hamilton Ave., soon lets contract shopping center. $1,000,000.

Calif., Wilmington—HOSPITAL—Kaiser Foundation, c/o Clarence W. Mayhew, archt., 251 Post St., San Francisco, soon lets contract, 60 bed hospital, $600,000.

HEAVY CONSTRUCTION—LB & CA

▲† **Utah Constr. Co.,** Box 1590, Salt Lake City, Utah, CA $1,372,172, est. $1,143,766, enlarging Pineview Dam and relocation of hy., Weber Basin Proj. Spec. DC 4424, Weber Co., UTAH. Bureau Reclamation, Dpt. Interior, Ogden, Utah. Bids June 14, awarded June 30. CD 6/17, under LB.

WASHINGTON—State Hy. Comn., Olympia,

A. J. Cheff Constr. Co., 10054 W. Marginal Way, Seattle, Wash., LB $76,832. (12 bidders) rein.-con. girder bridge over Secondary State Hy. 2-A N. E. 124 St., King Co. Bids July 5. CD 6/20.

WASHINGTON—State Hy. Comn., Olympia,

Wash.—Associated Sand & Gravel Co., 2508 Colby St., Everett, Wash., LB $162,728 (3 bidders) reconstr. roadway, surf., b. conc. paving 8.79 mi. Primary State Hy. 1, Blanchard to Bellingham, Skagit and Whatcom Counties;

Wash.—Peter Kiewit Sons Co., Longview, Wash., LB $92,567, (2 bidders) drainage, grading, surf., c. conc. and b. conc. paving, 0.96 mi. Primary State Hy. 12, Nicholas Blvd. in Longview, Cowlitz Co.;

Wash.—J. F. Konen Constr. Co., Lewiston, Idaho, LB $143,511 (4 bidders), drainage, grading, bit. penetration macad. 3.99 mi. Primary State Hy. 3, Fields Springs, State Park to Anatone, Asotin Co.;

Wash.—Washington Asphalt Co., 309 W. 39 St., Seattle, Wash., LB $122,035 (8 bidders) b. conc. 11.18 mi. Primary State Hy. 2, Lake Keechelus to Easton, Kittitas Co.;

Wash.—Wilder Constr. Co., Bellingham, Wash., LB $98,940, (1 bidder), b. conc. 3.05 mi. Primary State Hy. 1, Sunset Dr., Bellingham, Whatcom Co. Bids July 5. CD 6/20, 6/22.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento,

O. C. Jones & Sons, 1520 4th St., Berkeley, Calif., LB $135,854 (6 bidders) grading, surf. approx. 0.7 mi. offramp and detours, constr. two culverts in connection with Bayshore Freeway Work, San Mateo Co. Bids July 6. CD 6/10.

CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento,

Calif.—D. Gerald Bing, 6419 Palm Dr., Carmichael, Calif., LB $93,230, (7 bidders) placing base material and applying seal coat on Colusa Gridley Hy. between 10 mi. north of Colusa and Butte Co. line, Colusa Co.;

Calif.—Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB $215,882, (4 bidders) grading, surf. approx. 1.8 mi., constr. two bridges on FAS County Rte. 887 north of Bakersfield, Kern Co.;

Calif.—C. V. Kenworthy, 2037 E. Jarding Way, Stockton, Calif., LB $107,484 (10 bidders) grading 2.9 mi. FAS County Rte. 1187, El Dorado Co.;

Calif.—Lord & Bishop, P. O. Box 812, Sacramento, Calif., LB $124,535, (4 bidders) grading, surf. 0.5 mi. and constr. rein.-con. girder bridge at Old River north of Tracy on FAS County Rte. 907, San Joaquin Co.;

Calif.—Stewart & Nuss, Inc., 410 Thorne Ave., Fresno, Calif., LB $455,537, (7 bidders) plant mixed on cement treated surf on Sign Rte. 65 near Porterville, Tulare Co. Bids July 6. CD 6/10.

† **Olympian Dredging Co.,** 525 Market St., San Francisco, Calif., LB $129,881 (2 bidders) dredging 143,000 cu. yd. Sacramento River and 57,000 cu. yd San Joaquin River, Sacramento Co., CIVENG-04-167-55-60, CALIFORNIA. U. S. Eng., 1209 8th St., Sacramento, Calif. Bids July 1. CD 6/22.

† **N. L. Bosich,** 1148 N. San Gabriel Blvd., San Gabriel, Calif., CA $194,700, repair Runway 3-31 Naval Aux. Air Station, NOY 86780, Spec. 45891, EL CENTRO, CALIF. Dpt. Navy, San Diego, Calif. CD 10/22.

Guy F. Atkinson Co., Box 259, Long Beach, Calif., LB $498,760, wharf at Pier E, Berths 122, 123, 124, Long Beach Harbor, LONG BEACH, CALIF. Long Beach Harbor Dpt., 1333 El Embarkadero, Long Beach, Calif. Bids June 23. CD 6/9.

† **Teyssier & Teyssier,** 680 Chula Vista Ave., Chula Vista, Calif., CA $239,926, radar air traffic control center,

continued on page 144

Right from every angle to bear heavier loads with less maintenance

The basic precision principle of right-angle design is translated by Rollway into a bearing that rotates with least friction under practically all heavy-load conditions.

Precisely-made ends, rollers and slots afford little opportunity for sliding friction, side-shock, end-rub or skew to cause premature failure.

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Cancer strikes 1 in every 4 Americans. It strikes with vicious swiftness. Too often it is discovered — too late.

To protect yourself and your family, have a thorough medical examination every single year without fail. Six months after such an examination, every woman over 35 should return for a pelvic checkup. Every man over 45 should have a chest X-ray twice each year. *Many cancers can be conquered if caught in time!*

STRIKE BACK AT CANCER... MAN'S CRUELEST ENEMY

Give to AMERICAN CANCER SOCIETY

continued from page 142.

Naval Air Station, NOY 86701, Spec. 45812, MIRAMAR, CALIF. Dpt. Navy, San Diego, Calif. Bids June 28, awarded June 30. CD 10/22.

Fred J. Early, Jr. Co., 369 Pine St., San Francisco, Calif., LB $142,875, sewerage sys., Manlove Sewer Assessment Dist., SACRAMENTO, CALIF. Sacramento Co., 6 and Eye Sts., Sacramento, Calif.

† **Matich Bros.**, Box 390, Colton, Calif., CA $997,307, parking apron and stabilizing taxiway shoulders, Norton Air Force Base, ENG-04-353-55-169, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., Bids June 30, awarded June 30. CD 7/6, under LB.

Rothschild, Raffin & Wierick, 274 Brannan St., San Francisco, Calif., CA $824,258, water supply system, spillway and outlet works, SAN FRANCISCO, CALIF. City and San Francisco, Co., City Hall, San Francisco, Calif. CD 4/22, under LB.

W. E. Karstedt, 668 Morse St., San Jose, Calif. CA $99,958 (5 bidders) storm water drainage channel and appurtanances, between Kirk Rd. and Guadalupe River, SAN JOSE, CALIF. Santa Clara Co. Flood Control & Water Cons. Dist., Courthouse, San Jose, Calif. CA 3/31/53.

MacIsaac & Menke, 3440 E. 14 St., Los Angeles, Calif., CA $478,169, Reservoirs 850 and 1450, prestressed concrete 3 m.g. and 5 m.g., PALOS VERDES, CALIF., Palos Verdes Water Co., 78 Malaga Cove Plaza, Palos Verdes, Calif. Bids June 17, awarded July 7. CD 6/8.

† **Trepte Constr. Co.**, 2001 Kettner Blvd., San Diego, Calif., CA $583,929, turbo jet engine test cells, Naval Air Station, North Island, NOY 86764, Spec. 45875, SAN DIEGO, CALIF. 11th Naval Dist., Dpt. Navy, San Diego, Calif. Bids June 28, awarded June 30. CD 7/7 under LB.

BUILDINGS—LB & CA

▲ **Centuray Builders, Inc.**, 900 12th Ave., Seattle, Wash. CA Est. $1,200,000. 120 HOUSES, Westview Heights, EPHRATA, WASH. O. A. Carlson and F. Strand, 2612 Franklin St., Seattle, Wash.

N. Mortensen & Co., 1021 Westlake Ave. N., Seattle, Wash., CA $352,038 (6 bidders) general contract rein.-con. PHYSICAL EDUCATION BLDG. on piling fdn. and remodeling Woodrow Wilson Junior HIGH SCHOOL, SEATTLE, WASH. School Dist. No. 1,815 4 Ave. N., Seattle, Wash. Bids July 1. CD 620.

Williams & Burrows, 500 Harbor Blvd., Belmont, Calif., LB $269,400, (7 bidders) 3 story, 35,000 sq. ft. furniture WAREHOUSE and STORE, BELMONT, CALIF. Lyon Van & Storage Co., c/o Allison & Rible, archts., 625 S. Westmoreland Ave., Los Angeles, Calif.,

Dinwiddie Constr. Co., 210 Crocker Bldg., San Francisco, CA $497,400, 4 story, rein.-con. HOSPITAL addn., BERKELEY, CALIF. Herrick Memorial Hospital, 2001 Dwight Way, Berkeley, Calif. CD 7/1, under LB.

Pleasant Homes, 478 S. San Vincente St., Los Angeles, Calif. Owner Builds. $476,900, 55 frame, stucco DWELLINGS, Duff and Milham Aves., ELMONTE, CALIF.

No. Central Constr. Co., 1373 Jackson St., Hayward, Calif. CA $664,000, 83 HOME SUBDIVISION, HAYWARD, CALIF., San Marco Homes, Box 328, Hayward, Calif. CD 4/22.

▲ **Heirshberg Constr. Co.**, 6052 W. Venice Blvd., Los Angeles, Calif., CA $1,810,800, Francis Polytechnic HIGH SCHOOL, LOS ANGELES, CALIF. Los Angeles Bd. Educ., 1425 S. San Pedro St., Los Angeles, Calif. Bids June 24. CD 6/17.

Andrews & McGoh, 2098 Contra Costa Hy., Pleasant Hills Calif. Owner Builds. $529,200, 54 HOMES, PACHECO, CALIF.

Toffell & McAdam, 860 W. Foothill Blvd., Monrovia, Calif. CA $420,000. 35 frame, stucco DWELLINGS, Lark Ellen and Harvest Moon Aves., PUENTE, CALIF. Lark Ellen Terrace Co., 860 W. Foothill Blvd., Monrovia, Calif. Hugh Gibbs, 441 E. First St., Long Beach, Calif., archt.

Pacific Coast Builders, 1 S. Park St., San Francisco, Calif., CA $562,000, Brant Elementary SCHOOL, RICHMOND, CALIF. Richmond City Elementary School Dist. 1108, Bissell Ave., Richmond, Calif. Bids June 29. CD 6/6.

▲† **M. H. Golden Constr. Co.**, 3485 Noell St., San Diego 1, Calif., CA $1,567,000, Naval Training Center Recruit BARRACKS, NOY 89069, Spec. 47960, SAN DIEGO, CALIF. Eleventh Naval Dist., 1220 Pacific Hy., San Diego 1, Calif. Bids June 29, awarded June 30. CD 7/6, under LB.

Cahill Bros., Inc., 350 Sansome St., San Francisco, Calif., LB $480,000. design and construct BEER STORAGE BLDG., 10th and Harrison Sts., SAN FRANCISCO, CALIF. San Francisco Brewing Corp., 470 10th St., San Francisco, Calif.

▲† **Williams & Burrows Constr. Co.**, 500 Harbor Blvd., Belmont, Calif., CA $2,046,578, permanent BARRACKS and MESSING FACILITIES, NOY 83821, Spec. 43488, U. S. Naval Station, Treasure Island, SAN FRANCISCO, CALIF. P. Wks. Officer, Twelfth Naval Dist., San Bruno, Calif. Bids June 22, awarded July 5. CD 6/28, under LB.

William Simpson Constr. Co., 816 W. 5th St., Los Angeles, Calif., CA $250,000, constr. DRUG PLANT, SAN JOSE, CALIF. Brunswick Drug Co., c/o contractor.

† **Williams & Burrows**, 500 Harbor Blvd., Belmont, Calif. CA $744,000 (3 bidders) 60 unit MILITARY HOUSING, at U. S. Naval Hospital, OAKLAND, CALIF. and U. S. Naval Radio Station, SKAGGS ISLAND, CALIF., NOY 85734, Spec. 46587. P. Wks. Office, 12th Naval Dist., San Bruno, Calif. Bids June 22, awarded July 5. CD 6/28, under LB.

Stevenson Pacific Co., 1135 Chestnut St., Redwood City, Calif., CA $250,000, cookie FACTORY, SOUTH SAN FRANCISCO, CALIF. R. E. Bellenberg, c/o Mr. Allisons Cookie Co., 663 El Camino Real, South San Francisco.

▲ **Diversified Builders, Inc.**, 1616 S. Greenwood Ave., Montebello, Calif., LB $1,353,500 FACTORY bldg. and addns. to three existing bldgs., TORRANCE, CALIF. Douglas Aircraft Co., Inc., 827 Lapham St., El Segundo, Calif. Bids July 7. CD 6/21.

CANADA

HEAVY CONSTRUCTION—BA

Ont., Barriefield—BA 7/26—Defence Constr. Ltd., 56 Lyon St., Ottawa, water supply main at Army Camp. $75,000. Plans deposit $100.

▲ **Ont., Ottawa**—MESS—BA 7/28—Defence Constr. Ltd., 56 Lyon St., standard combined mess at R.C.A.F. Station, Uplands. $1,000,000. Plans deposit $100.

Ont., Ottawa—STEAM DISTRIBUTION SYS.—BA 7/28—Defence Constr. Ltd., 56 Lyon St., underground steam distr. sys. at R. C. A. F. Station, Uplands Airport. $300,000.

Que., Lachine—GENERATING UNIT—BA 7/28—Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont., steam generating unit at R. C. A. F. Station. $225,000. Plans deposit $100.

BUILDINGS—BA

▲ **Que., Valcartier** — HOUSING — BA 7/26 — Central Mortgage & Housing Corp., 940 Cote de Liesse Rd., Montreal, 142 standard C.M.H.C. houses at Army Camp. $1,500,000. Plans deposit $100. M. P. McAndrew, c/o owner, engr. CD 6/30/54.

▲ **Que., Montreal**—OFFICE—BA 8/1—Canadian Overseas Telecommunications Corp., 211 St: Sacreement St., superstructure for 8 story, 84x178 ft. concrete office bldg., University and Belmont Sts. $1,200,000. A. Leslie Perry, 1434 St. Catherine St. W., archt. CD 3/30.

▲ **Que., Valcartier**—HOUSING—BA 8/2—Central Mortgage & Housing Corp., 940 Cote de Liesse Rd., Montreal, Zone 16, 130 M.D. PA Type "B" rein.-con. apartments at Army Camp. $2,600,000. Plans deposit $100. M. P. McAndrews, c/o owner, engr. CD 6/30/54.

N. B., Fredericton—BUILDING, QUARTERS, etc.—BA 8/3—Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Building Contr. "J", 11 quartermasters and technical stores bldg. for Canadian Army Camp Gagetown. $750,000. Plans deposit $100. H. Ross Wiggs, 4350 Sherbrooke St. W., Montreal, Que. engr. CD 8/1/52.

▲ **N. B., Fredericton**—GARAGES—BA 8/5—Defence Constr. (1951), Ltd., 56 Lyon St., Ottawa, Ont., Building Contr. "K", seven 40-vehicle garages; one 50-vehicle garage; three tank hangars; two gun drill and maintenance bldgs., for Canadian Army Camp Gagetown. $1,000,000. Plans deposit $100. H. Ross Wiggs, 4350 Sherbrooke St. W., Montreal, Que., engr. CD 8/1/52.

BUILDINGS—SLC

▲ **N. B., St. John**—STORAGE—Atlantic Sugar Refineries, Ltd., 485 McGill St. (Box 7), Montreal, Que., soon lets contract, 3 story, no bsmnt., 100x275 ft. rein.-con. fdn. and slab constr., brick and tile walls shipping and storage bldg. $1,000,000. A. G. Acres & Co. Ltd. 2135 Culp St., Niagara Falls, Ont., engr. CD 10/13.

Ont., Toronto—PLANT—Industrial Wire & Cable, Ltd., 35 Golden Ave., soon lets contract, 1 story, no bsmnt., approx. 110,000 sq. ft. steel frome, brick plant and offices. $800,000. H. B. Kohl, 29 Colborne St., archt.

Ont., Hamilton—LUMBER MILL—Lawson Lumber Co. Ltd., 260 Dunsmuir Ave., soon lets contract, 15,000 sq. ft. lumber mill. $100,000. Huget & Secord, 299 Main St. E., archts.

HEAVY CONSTRUCTION—LB & CA

ALBERTA — Alberta Govt., Parliament Bldgs., Edmonton.

Alta.—Gallelli & Sons Co. Ltd., 620 Riverside Blvd., Calgary, Alta., CA $233,591, laying stabilized grav. base course 14 mi. Hy. 16 from Lacombe to Bentley;

Alta.—Guenther Constr. Ltd., Lethbridge, Alta., CA $109,436, grading, etc. approx. 6 mi. Hy. 22, from Millarville to Turner Valley;

Alta.—Standard Gravel & Surfacing, 5340 1st St. S.W., Calgary, Alta., CA $230,512, laying grav. base course approx. 10 mi. Hy. 9 from Hanna to Richdale. Grand total $573,539. Awarded June 30. CD 12/1/43.

BRITISH COLUMBIA—B. C. Govt., Parliament Bldgs., Victoria,

P. F. Law Constr. Co. Ltd., West Summerland, B. C. LB $271,042, reconstr. 8.37 mi. No. 3 and No. 95 Hys., Yahk-Kingsgate Sect., Proj. 627. Bids June 28.

C. J. Oliver, Ltd., 660 Howe St., Vancouver, B. C., CA $348,888, recreation and drill hall at R.C.A.F. Station, SEA ISLAND-VANCOUVER, B. C. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids May 12. CD 4/21.

Mannix, Ltd., Vancouver Block, Vancouver, B. C. CA $210,543, sewerage sys., WESTVIEW, B. C. Village, Village Hall, Westview, B. C. Associated Engineering Services, Ltd., 1934 W. Broadway, Vancouver, B. C., engrs. Bids May 31, awarded June 30. CD 6/16, under LB.

▲ **Argo Constr. Ltd.**, 18 Gladstone Ave., Montreal, Que., CA $1,283,500 (6 bidders) 160 ft. span steel arch hangar at Rivers Royal Canadian Air Force Base, RIVERS, MAN. Defence Construction (1951) Ltd., 56

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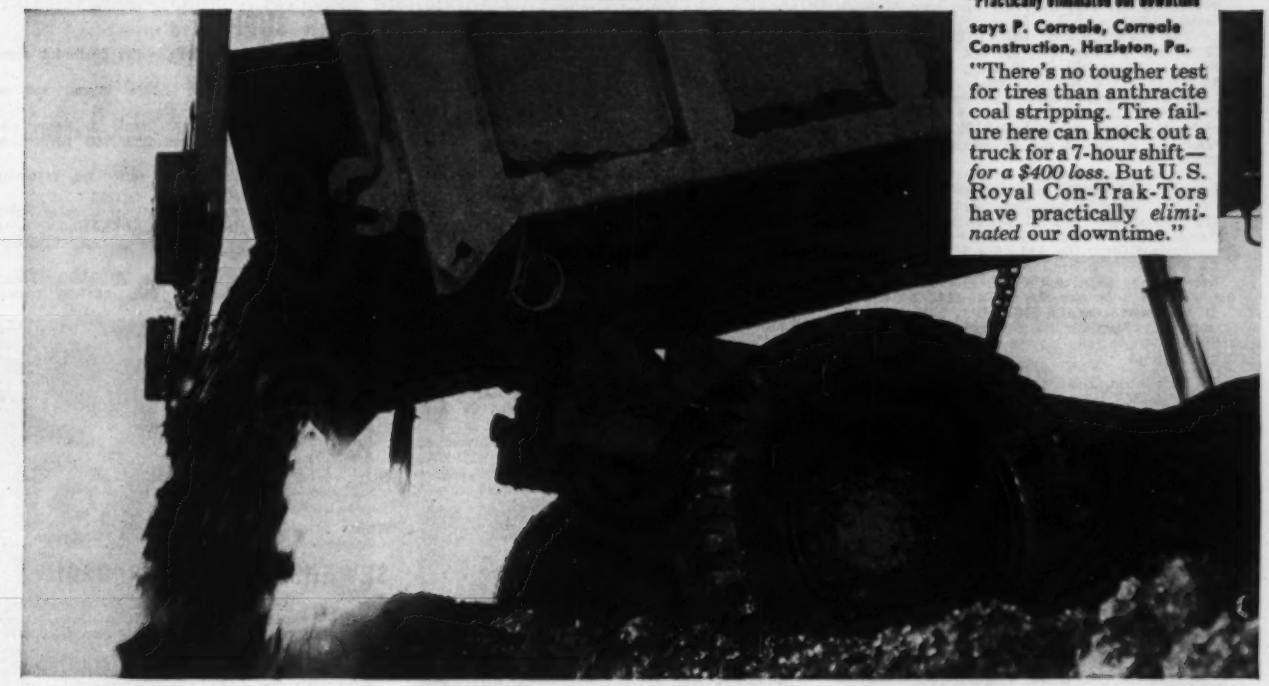
US RUBBER

United States Rubber Company 4-year project pays off—
leading operators report they are well ahead with U. S. Royal!

"Practically eliminated our downtime"
says P. Correale, Correale Construction, Hazleton, Pa.
"There's no tougher test for tires than anthracite coal stripping. Tire failure here can knock out a truck for a 7-hour shift—*for a $400 loss.* But U. S. Royal Con-Trak-Tors have practically *eliminated* our downtime."



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The new U. S. Royal Con-Trak-Tor—Full Lug, an important result of U. S. Royal's 4-Year Truck Tire Project, is cutting equipment downtime 'way down for leading operators like Correale Construction Company.

Good reasons, too! The Con-Trak-Tor's *Nylon cord carcass* stands up to vicious shocks, shrugs off rocks and snags. It has *triple impact protection*—extra rubber between plies, double shock-pads under the tread, extra-tough construction at the crown. Its *full lug traction* pulls right through toughest going, just *won't* bog down!

Why not let the Con-Trak-Tor prove it can reduce *your* downtime, lower *your* operating costs? Your U. S. Royal Dealer has this great tire in your size. Have him put it on your wheels—and prove to yourself why leading operators like Correale Construction Company report they're *well ahead* with U. S. Royals!

U.S. ROYAL NYLON CON-TRAK-TOR FULL LUG

ASK YOUR U. S. ROYAL DISTRIBUTOR TO SHOW YOU THE NEW FILM ON BETTER HIGHWAYS: "MEMO TO MARS"

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Lyon St., Ottawa, Ont. Bids June 9, awarded June 30. CD 5/18.

▲ **ONTARIO**—Dpt. Hys., Parliament Bldgs., Toronto, Ont.—**Curran & Briggs, Ltd.**, 61 Haverson Blvd., Toronto, Ont., CA $786,618 (3 bidders) granular base, hot mix paving, Queen Elizabeth Way and Hy. 122 at Oakville interchange, Contr. 55-129;

Ont.—**Finley W. McLachlan Constr. Co. Ltd.**, 195 Fairbanks Ave., Toronto, Ont., CA $272,583 (11 bidders) grading, culverts, granular base for 4 mi. at Powassan diversion on Hy. 11, Contr. 55-114;

Ont.—**Hewitson Constr. Co. Ltd.**, 612 Public Utility Bldg,. Port Arthur, Ont., CA $192,420 (3 bidders) hot mix paving Hy. 120, 14.8 mi. east from Atikokan. Contr. 55-123;

Ont.—**King Paving Co. Ltd.**, Box 36, Ont., CA $89,219 (2 bidders) granular base, hot mix paving 2.25 mi. Hy. 5 at Nelson Hill (Third Lane), Hamilton, Contr. 55-105;

Ont.—**R. E. Law Crushed Stone, Ltd.**, Port Colborne, Ont. CA $134,385 (6 bidders) resurf. 10.8 mi. Hy. 20 west of Fronthill, Contr. 55-433; CA $106,980, (5 bidders) resurf. 7.2 mi. Hy. 20 east of Grimsby Rd., Hamilton, Contr. 55-434;

Ont.—**Rayner Constr. Ltd.**, 29 Commercial Rd., Toronto, Ont., CA $102,948 (10 bidders) resurf. 12 mi. Hy. 27 from Midhurst to Elmvale, Contr. 55-437; CA $74,340, (10 bidders) resurf. 8.5 mi. Hy. 26 from Minesing to Barrie, Contr. 55-436;

Ont.—**Towland Constr. Co. Ltd.**, Box 815, London, Ont., CA $88,700 (7 bidders) resurf. Hy. 12 for 12 mi. from Atherley to Brechin, Contr. 55-435;

Ont.—**Warren Bituminous Paving Co. Ltd.**, 1454 Bloor St. W., Toronto, Ont. CA $102,795 (1 bidder) channelization at 4 locations Hy. 58, near Hamilton, Contr. 55-124. Grand total $1,950,988. Awarded July 7. CD 4/27/44.

H. J. Mc Farland Constr. Co., Ltd., Talbot St., Picton, Ont., CA $69,469, installing fire protection water mains and hydrants at Royal Canadian Air Force Depot, ANGUS, ONT. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Awarded July 5.

Dunker Constr. Co.. Ltd., 178 Louisa St., Kitchener, Ont., CA $82,404, storage reservoir, pumphouse, GEORGETOWN, ONT. Town, Town Hall, Georgetown, Ont. Philips & Roberts, 113 Darling St., Brantford, Ont., engrs. Awarded June 30.

A. Cope & Son, 19 Albert St., Hamilton, Ont., CA $366,402. paving and sidewalks on Brucedale, Dunsmire, Paradise Sts., etc., HAMILTON, ONT. City, Hamilton, Ont. CD 7/10/44.

Pearce Constr. Co. Ltd., 46 King St. W., Hagersville, Ont., CA $169,903, 8,750 ft. 8- to 24-in. sewers: 5,000 ft. 4- to 8-in. water mains; 3,700 ft. macadamed roads and auxiliary works, KENORA, ONT. Town, Town Hall, Kenora, Ont. Proctor, Redfern & Laughlin, 11 Jordan St., Toronto, Ont., engrs. awarded July 4.

Miller Paving, Ltd., 56 Blake St., Toronto, Ont., LB $86,425 (5 bidders), grading, graveling and culverts 1.5 mi. Maple Rd. and Weston Rd., NEWMARKET, ONT. Toronto & York Roads Comn., York County Bldg., Newmarket, Ont.

McNamara Constr. Co. Ltd., 42 Industrial St., Toronto, Ont., LB $969,000 (13 bidders) dredging 722,000 cu. yd. constr. 3,680 ft. breakwater, PORT ARTHUR, ONT. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids June 29. CD 6/23.

Instrusion Prepakt, Ltd., 159 Bay St., Toronto, Ont. CA $179,000 (3 bidders) repairs, alterations to northeast entrance pier of Sault Ste Marie canal. SAULT STE. MARIE, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids June 13, awarded June 30. CD 6/20, under LB.

Standard Paving & Materials, Ltd., 402 Harbor Commission Bldg., Toronto, Ont., LB $248,998, est. $500,000. (10 bidders) 5,000 ft. second, hard surface runway, Timmins Airport, TIMMINS, ONT. Dpt. Transport, Hunter Bldg., Ottawa, Ont. CD 6/28.

Applewood-Dixie, Ltd., Port Credit, Ont., CA $75,000. 6 mi. sidewalk in Bloordale subdivision, in suburban Etobicoke, TORONTO, ONT. G. S. Shipp & Son, Ltd., 1177 Queen Elizabeth Way, Port Credit, Ont. awarded July 4.

Foundation Co. of Canada, Ltd., 1220 Bay St., Toronto, Ont., LB $271,153 (15 bidders) Parkside Dr. overpass in connection with Lake Shore Expressway, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. A. D. Margison & Assocs., Ltd., 30 Eglinton Ave. E., Toronto, Ont. engr. Bids July 4. CD 6/15.

S. McNally & Sons, Ltd., 2200 King St. E., Hamilton, Ont., LB $209,535, supply and installation 42 in. water main, Lawrence Ave. and Keele St. area, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. CD 5/31.

▲ **Walsh-Canadian Constr. Co. Ltd.**, 1 Wellington St. W., Toronto, Ont., CA $4,213,800 (7 bidders) excavation of seaway channel in Lachine for 3¾ mi. and constr. required diking, from Station 250 plus 00 to 450 plus 00, Lachine sect., incl. constr. turning basin and exten. of intake pipe at St. Lambert, QUEBEC. St. Lawrence Seaway Auth., No. 2, Temporary Bldg., Ottawa, Ont., Bids June 21.

Northern Constr. Co. & J. W. Stewart Ltd., 1304 Hornby St., Vancouver, B. C., CA $3,279,050 (5 bidders), excavation of seaway channel in Lachine Sect. for 3 mi., constr. required diking, from Station 450 plus 00 to 605 plus 00, Lachine Sect., Incl. installation temporary service pipes at Laprairie, (Quebec).

Town of Port Alfred, Town Hall, Port Alfred, Que. Own Forces. $150,000. imprv. streets, incl. street openings paving and sidewalks and repairs, PORT ALFRED, QUE.

▲ **SASKATCHEWAN**—Sackatchewan Govt., Regina, Sask.—**L. S. & M Constr. & Equip. Co. Ltd.**, Lang, Sask., CA $127,500, grading Hy. 15 from Junct. of No. 9 Hy. to Melville and No. 14 hy., adjacent to Saltcoats;

Sask.—**A. C. Lanz, Nipawin, Sask.**, CA $204,000, grading, etc. Hy. 35, Archerwill to Sylvania;

Sask.—**Lucas Constr. Ltd.**, Lang, Sask. CA $637,000. bit. surf. Hy. 1, 5 mi. west of Piapot to west of Maple Creek;

Sask.—**Everett Metcalf**, Maple Creek, Sask., CA $211,000, bit. surf. Hy. 1 from Valjean to Ernfold and connection road from No. 10 hy. near Chaplin;

Sask.—**Ramsay Constr. Co., Ltd.**, Regina, Sask., CA $294,000, bit. surf. Hy. 1, west of Maple Creek to Alberta boundary. Grand total $1,473,500. Awarded June 30. CD 12/6/51.

Dawson & Hall, Ltd., 775 Clark Dr., Vancouver, B. C. LB $394,418 (6 bidders) 300 ft highway bridge, 24 ft. roadway, 4½ ft. sidewalks across Yukon River, WHITEHORSE, YUKON TERRITORY. Dpt. P. Wks. Hunter Bldg., Ottawa, Ont. A. A. Anderson, c/o owner, ch. engr. Bids June 29. CD 6/22.

BUILDINGS—LB & CA

Assiniboia Constr. Co. Ltd., Pearce Estate, Calgary, Alta., CA $484,193, ADMINISTRATION BLDGS., TRANSIT BLDG., 12 ORDNANCE AMMUNITION MAGAZINES, pump house, reservoir, outside services for army camp, WAINWRIGHT, ALTA. Defence Constr. (1951) Ltd., 56 Lyon St., Ottawa, Ont. Bids June 1, awarded June 30. CD 5/24.

Byers Constr. Co., Ltd., 5675 Western Ave., Montreal, Que., LB Est. $650,000. HIGH SCHOOL, CORNER BROOK, NEWFOUNDLAND. Bd. School Comrs., J. O. Bougamle, secy., Corner Brook, Newfoundland. Bids June 8. CD 5/27.

Pigott Constr. Co. Ltd., 1250 Bay St., Toronto, Ont. CA Est. $500,000. 1 story, 60,000 sq. ft. floor space for PLANT, 10,000 sq. ft. for OFFICE, BELLEVILLE, ONT. Deloro Smelting & Refining Co. Ltd., Deloro, Ont. Awarded June 30.

F. W. Sawatzky Constr. Ltd., 533 Marin St., Winnipeg, Man. CA $457,600 (10 bidders), 50-bed HOSPITAL, DRYDEN, ONT. Dryden & District General Hospital Bd., Dryden, Ont. Bids June 29, awarded July 4. CD 6/23.

▲ **Pigott Constr. Co., Ltd.**, Pigott Bldg., Hamilton, Ont. CA $1,300,000. constr. foundation for $5,000,000 WIRE MILL, HAMILTON, ONT. Steel Co. of Canada, Ltd., Wilcox St., Hamilton, Ont. Awarded July 5. CD 6/20, under CA.

Camston, Ltd., 2916 Bloor St. W., Toronto, Ont., CA $250,000. 1 story 208x241 ft. PLANT, with 65x130 ft. OFFICE SECT. concrete block fdn., steel, brick and block walls, TORONTO, ONT. Coro (Canada) Ltd., 180 University Ave., Toronto, Ont. Crang & Boake, 79 Huntley St., Toronto, Ont., archts. Alex Tobias, 24 Cecil St., Toronto, Ont., engr. Awarded June 23.

E. G. M. Cape & Co., 620 Cathcart St., Montreal, Que. CA Est. $190,000. 1 story, approx. 26,000 sq. ft. PACKAGE FOODS PLANT addn., TORONTO, ONT. General Mills (Canada), Ltd., 1500 Martin Grove Rd., Toronto, Ont. Awarded July 4.

J. H. Ross Constr. Co. Ltd., 79 Huntley St., Toronto, Ont., CA Est. $150,000. 1 story 96x213 ft. steel concrete block, rear and side walls, brick front, FACTORY and OFFICE, TORONTO, ONT. C. N. Products, 255 Raleigh Ave., Toronto, Ont. Onasick & McMurtry, 79 Huntley St., Toronto, Ont., engrs. Awarded June 27.

Soules Constr. Ltd., 880 Bay St., Toronto, Ont. Owner Builds. Est. $400,000. 5 story, no bsmnt., 76x126 ft. steel frame OFFICE BLDG. Eglinton and Dunfield Aves., TORONTO, ONT. D. G. Hallford, 155 Jane St., Toronto, Ont., archt., Leslie Thomas, 26 Queen St. E., Toronto, Ont., engr.

Hay & Co., Ltd., Horwick Ave., Woodstock, Ont. Owner Builds. $200,000. WAREHOUSE exten., WOODSTOCK, ONT. CD 7/1.

Michaud & Simard, Inc., 575 Arago St. W., Quebec City, Que., LB $135,970, rebuilding certain areas of airport runway, placing asphaltic overlay throughout its entire length, MOUNT JOLI, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids July 5. CD 6/29.

▲ **Gaspard Archambault, Ltd.**, 5210 Van Horne Ave., Montreal, Que., CA Est. $5,000,000. 400 units HOUSING program in suburban LaSalle, MONTREAL, QUE. Riverside Housing, Inc., 5210 Van Horne Ave., Montreal, Que. Ben-Ami Shulman, 5174 Cote des Neiges Rd., Montreal, Que., archt. Awarded July 4.

A. Janin & Co., Ltd., 1460 Sherbrooke St. W., Montreal, Que., CA Est. $800,000. (7 bidders) 4 story, no bsmnt. 40x275 ft., rein.-con. fdn. and frame, brick Old People's HOME, Beaugrand and Sherbrooke Sts., MONTREAL, QUE. L'Aide Aux Vieux Couples, c/o Jacques M. Morin, archt. 84 Notre Dame St., Montreal, Que. Bids June 20, awarded June 30. CD 6/6.

Concrete Construction, Ltd., 1082 Decarie Blvd., Montreal, Que., CA $765,000. (2 bidders) 2 story, structural steel frame, brick with tile inlay synthetic PLANT BLDG. addn., MONTREAL, QUE. Canadian Spool Cotton, Ltd., 421 Pius IX Blvd., Montreal, Que. Wood, Blachford & Ship, 4444 Sherbrooke St., W., Montreal, Que., archt. Awarded July 4.

J. E. Vincent, Ltd., 592 Liege St. E., Montreal, Que. CA $250,000 (6 bidders) 1 story, 50x133 ft. rein.-con. fdn. and frame PLANT, MONTREAL, QUE. W. Howick Mfg. Co., 50 Jean Talon St. W., Montreal, Que. Colin H. Copeman, 1117 St. Catherine St. W. Montreal, Que., archt. Awarded July 4.

▲ **Scott & Perry, Ltd.**, 1980 Sherbrooke St. W., Montreal, Que. Owner Builds. $3,000,000. 200 unit HOUSING, near Bedford Park, MONTREAL, QUE. CD 5/14.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **Western Constr. Co., Inc. & John C. Miller Co.**, P. O. Box 2274, Anchorage, Alaska, CA $189,670, erection of prefab warehouses and addns. and remodeling other warehouses, Elmendorf Air Force Base, Inv. 55-80, ALASKA. U. S. Eng., Anchorage, Alaska. Bids June 17. CD 6/24, under LB.

PROPOSED PROJECTS

WATER SUPPLY

Idaho, Orofino—City, City Hall, water treatment plant, $121,500.

Iowa, Clarinda—City, water system imprvs. and extensions, $406,250.

Mich., St. Clair Shores—City, Donald J. Harm, clk., 24800 Jefferson Ave., voted $525,000 bonds June 30, reservoir. CD 5/6.

Mich., Ypsilanti—Ypsilanti Twp., water sys. expansion, distr. mains, $250,000.

▲ **Tex., Beaumont**—City, City Hall, c. I. water mains, $750,000; c. I. water distr. lines, $1,750,000; water storage, $100,000; water pumping unit, $150,000. CD 1/5.

Tex., Carrollton—City, water lines, $100,000. Forrest & Cotton, 803 Praetorian Bldg., Dallas, consult. engrs.

Tex., Jacksonville—City, R. C. Buckner, mayor, 30,000 acre ft. Lake on Gum Creek adjacent to city limits, for domestic water supply. $700,000. CD 9/22/48.

Tex., Weatherford—City, c/o Alvah Allen, mayor, water supply imprvs., incl. dam and filter plant, supply lines, $400,000. Freese & Nichols, 407 Danciger Bldg., and Joe J. Rady, 511 Insurance Bldg., Fort Worth, consult. engrs. CD 11/30.

Wash., Quincy—Town, Town Hall, 1 m.g. reservoir, $100,000. Gray & Osborne, 230 S. 2 St., Yakima, consult. engrs.

Wash., Spanaway—Town, Town Hall, water supply, storage and distr. sys. $314,000. CD 3/22/50.

SEWERS, WASTE DISPOSAL

Idaho, Caldwell—City, City Hall, voted bonds Apr. 26, sewage disposal plant, $490,700; sewerage sys. $357,600. E. C. Reynolds, Jr., Idaho Bldg., Boise, consult. engr. CD 4/14.

Idaho, Hailey—City, City Hall, sewerage sys., treatment plant, $170,000. CD 3/25/46.

Idaho, Marsing—City, City Hall, sewerage sys. with treatment plant, $145,600. CD 11/3/50.

Mich., Ann Arbor—Loch Alpine Subdivision, David Shubow, 600 Lawyers Bldg., Detroit, sewage disposal plant, treatment facilities, sanitary sewers 530 acre building development, Huron River Drive, $150,000, Ayers, Lewis, Norris & May, 500 Wolverine Bldg., Ann Arbor, consult. engrs.

▲ **Mich., Flint**—Bd. Supervs. Genesee Co., G. R. Filey, chn., sewerage sys., sewage disposal plant, sanitary sewers, $12,000,000.

▲ **Mich., Ypsilanti**—Ypsilanti Twp., Twp. clk., sewage disposal plant, treatment facilities, $900,000; outfall and sanitary sewer, East Michigan Ave. Section from city limits east to Lemay St., $400,000. CD 11/21/44.

▲ **Pa., Pleasant Hills**—Pleasant Hills Auth., 72 Clairton Blvd., sewage disposal and sewers. $1,500,000. Consoer, Townsend & Assoc., 351 E. Ohio St., Chicago, Ill., consult. engrs. M. E. Frye & Assoc., 428 Blvd. of Allies, Pittsburgh, engrs.

▲ **Tex., Beaumont** — City, sanitary sewer collection lines, $750,000; sanitary sewer dist. unit, $175,000; storm sewers, $200,000. CD 7/31/52.

Tex., San Antonio—N. O. Simmons Building Co., Box 5201, Beacon Hill Station, sanitary sewers, $80,000; storm sewers, $75,000 off Loop 13.

Wash., Concrete—Town, Town Hall, sewerage sys. with pumping and treatment plants, $138,800.

Wash., Gig Harbor—Town, Town Hall, sewerage sys. with treatment plant and outfall. $238,000. CD 2/27/50.

Wash., Monroe—Town, Town Hall, sewerage sys. with pumping and treatment plants. $123,700.

Wash., Pateros—Town, Town Hall, sewerage sys. with pumping and treatment plants. $145,000.

Wash., Sumner—City, City Hall, sewerage sys. with treatment plant. $293,700. CD 2/5/47.

Wis., Wausau—City, storm sewers, $350,000-$400,000. J. Donolure Eng. Co., 606 N. 8th St., Sheboygan, consult. engr. CD 8/25.

Ont., Guelph—City, City Hall, sewage treatment plant exten. $750,000. Gore & Storrie, Ltd., 1130 Bay St., Toronto, consult engr. Fred Woods, c/o owner, city engr. CD 4/27.

Ont., Simcoe—Council, Robert Hunter, mayor, trunk sewer exten. $260,000. W. M. Veitch, R R 4, London, consult. engr.

BRIDGES

▲ **Tex., Freeport**—Road Dist. No. 3, Brazoria Co., Freeport, voted bonds July 2, rein.-con. vehicle bridges; across Brazos River channel, $525,000; over Old Oyster Creek on Clute-Angleton Rd. $75,000;

continued on page 148

Keeping Open a Gateway to Wonderland

Du Pont "Team" Controls Throw, Vibration in Wyoming's Wind River Canyon

In Wyoming's Owl Creek Mountains, U. S. 20, a popular route to scenic Yellowstone and Teton National Parks, cuts through 4,000-foot-deep Wind River Canyon. To accommodate thousands of tourists, the State Highway Dept. decided to improve a hazardous three-mile stretch of the highway. The Inland Construction Co. of Cheyenne was given the job—with instructions to keep traffic moving. This meant four-hour work periods, one-hour public travel.

Despite snow and 20-below-zero weather, a way had to be found to:

(1) control blasts so broken rock could be cleared in time for traffic,

(2) prevent flying material from damaging nearby rail and telephone lines,

(3) keep vibration from rolling boulders on railroad tracks.

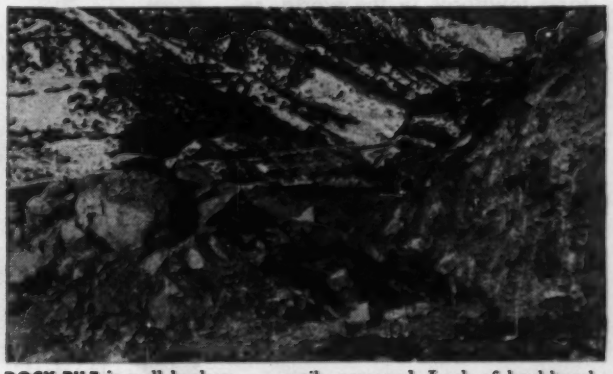
SOLUTION: Use of Du Pont blasting "team"—"Gelex" No. 1, MS Delay Electric Blasting Caps and CD-48 Blasting Machines. Force and direction of throw were controlled, vibration reduced. The job was done—while the Gateway stayed open.

"GELEX" No. 1 is carried to shooting location by powder men. With 350,000 cubic yards of material, mostly granite, to be moved, Inland Construction selected this dependable, economical dynamite.

BLASTING CREW loads cartridges of "Gelex" No. 1, 1⅛ x 8, into holes 16′ deep. Holes were primed with Du Pont MS Delay Electric Blasting Caps.

JOB SUPERINTENDENT Dan Ratliff fires blast with CD-48 Blasting Machine. This machine easily handles up to 1,200 holes... eliminates need for generators or permanent power lines for blasting.

BLAST is fired on new roadway across Wind River from C. B. & Q. Railroad tracks and tunnel. Du Pont MS Delay Caps reduce vibration, guard railroad from damage.



ROCK PILE is well broken . . . easily removed. Lack of backbreak, shown by clean side wall, is typical result of using MS Delay Electric Blasting Caps.

Whether it's a ticklish job or only an ordinary blasting problem, you'll profit by seeing the Du Pont representative in your section about a Du Pont blasting "team" for you. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

DU PONT EXPLOSIVES

Blasting Supplies and Accessories

DU PONT

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING... *THROUGH CHEMISTRY*

continued from page 146

across Oyster Creek in Willow Dr. in Lake Jackson, $75,000; across Oyster Creek on Stratton Ridge Rd., $75,000. CD 6/8.

STREETS AND ROADS

▲ **ARKANSAS**—State Hy. Dpt., State Capitol, Little Rock,

Dallas Co.—grav. base 9.3 mi. State Hy. 48, Farindale-Carthage, $28,400.

Hot Spring Co.—relocation and paving 3 mi. U. S. Hy. 270, Malvern, $150,000.

Craighead and Greene Counties—blacktop 9.57 mi. State Hy. 141, Jonesboro-Walcott, $43,600.

Polk Co.—paving 16 mi. gap U. S. Hy. 270, between U. S. Hy. 71 and Oklahoma border, $800,000.

Van Buren Co.—grav. surf. 15 mi. Hy. 16, Clinton-Copeland, $40,300.

† **MAINE**—Bureau P. Rds., Dpt. Commerce, c/o Acadia National Park office, Bar Harbor,

Bar Harbor—park entrance and east side Senic Rd., vicinity of here, $506,300.

Mich., Inkster—Dearborn Twp., concrete paving 65,000 sq. yd. Valley Park subdivision roads, 10,000 sq. ft. sidewalks $125,000. Johnson & Anderson, 1307 Pontiac State Bank Bldg., Pontiac, consult. engrs.

OKLAHOMA—State Hy. Dpt., Capitol, Oklahoma City, Zone 5,

McClain Co.—grade, drain two-lane Hy. 77 from South Canadian River to Pursell. $400,000. G. H. Bittle, c/o owner, engr.

Tex., Carrollton—City, street paving, $150,000. Forrest & Cotton, 803 Praetorian Bldg., Dallas, consult. engrs.

Tex., Terrell—City, voted bonds June 28, street imprvs. paving, $160,000. CD 2/17/54.

Wash., Ephrata—City, City Hall, street imprvs. $380,000. Gray & Osborne, 230 S. 2nd St., Yakima, consult. engrs.

Wash., Puyallup—City, City Hall, paving streets, concrete curbs and gutters, $150,000. Gray & Osborne, 230 S. 2 St., Yakima, consult. engrs. CD 3/22/51.

EARTHWORK, WATERWAYS

▲† **California**—U. S. Eng., 1209 8th St., Sacramento, constr. east levee of Steamboat Slough on Grand Island, Sacramento Co. $400,000; levee work Sutter to Steamboat Slough, Sacramento Co. $470,000; bank and levees work from Ryer Island Ferry to Miner Slough, Solano Co. $420,000; reconstr. Hastings Tract levees from Hastings Cut upstream, Solano Co. $300,000 clearing in Feather River Channel, Sutter and Yuba Counties, $380,000; levee and bank revetment on Elkhorn, Sutter and Miner Sloughs in Reclamation Dist. No. 999, Yolo and Solano Counties, $390,000; Sacramento River bank protection from Knights Landing upstream to Colusa on both banks of the river, Yolo, Sutter and Colusa Counties, $410,000; reconstr. back of Reclamation Dist. No. 108 between Sycamore Slough and Southern Pacific Co. railroad tracks, Yolo and Colusa Counties, $400,000. CD 4/21/44.

Tex., Beaumont—City, City Hall, open drainage, $275,000. CD 12/28/53.

AIRPORTS

▲ **Calif., Muroc**—AIR BASE—U. S. Eng., 751 S. Figueroa St., Los Angeles, plans by Van Dyke & Barnes, 2234 Beverly Blvd., Los Angeles, visitors bldgs., $430,000; chapel educational wing, non-technical library, bowling alley, recreational workshop, $370,000; dining hall, officers' open mess, $150,000; air force headquarters, $380,000; officers' swimming pool, $135,000, foregoing at Edwards Air Force Base. CD 8/30.

† **Calif., Oxnard**—TEST CELL, WORKSHOP, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, jet test cell, $130,000; recreation workshop, base theatre, squadron headquarters, $190,000, at Oxnard Air Force Base, Koebig & Koebig, 3142 Wilshire Blvd., Los Angeles, consult. engrs.

▲† **Calif., Victorville**—AIR BASE—U. S. Eng., 751 S. Figueroa St., Los Angeles, squadron operations bldg., $85,000; engine build-up shop, $500,000; organizational hangar, $750,000; squadron headquarters, $100,000; AIE administration bldg., $100,000. Moffatt & Nichols, 122 W. 5th St., Los Angeles, consult. engrs.; plans by L. W. Davidson & Assoc., 3923 W. 6th St., Los Angeles, 3 story concrete block airmen's dormitory and 1 story concrete dining hall, $850,000; food sales commissary, $365,000; NCO club, $250,000; GAR-1 bulk storage bldg., $85,000; security guard house, $75,000, foregoing at George Air Force Base. CD 8/30.

† **Nev., Indian Springs**—AIR BASE—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., sewage treatment plant, disposal facilities, $100,000; 200-man concrete block airmen's dormitory, $370,000, at Indian Springs Air Force Base. Koebig & Koebig, 3142 Wilshire Blvd., Los Angeles, Calif., consult. engrs.

▲† **Nev., Las Vegas**—AIR BASE—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., 3 story, 100-bed concrete block hospital, $2,700,000; field maintenance shop, $250,000; open leg steel observation tower, $170,000; gas mains, $400,000; 10 story, concrete block armament and electronic shop, $90,000, at Nellis Air Force Base. Koebig & Koebig, 3142 Wilshire Blvd., Los Angeles, Calif., consult. engrs. CD 12/10/52.

▲† **Nev., Reno**—HOMES—Purch. & Contg. Officer, Stead Air Force Base, Reno, plans by Ferris J. Erskine, 777 La Rue St., 95 homes, Stead Air Force Base. $1,250,000.

Okla., Oklahoma City—CAFE and DINING HALL—Sky Chef, Inc., c/o Will Rogers Airport, plans by Hudgins, Thompson & Ball, 1430 Classen St., cafe and dining hall, Will Rogers Airport. $350,000.

† **Tex., Beeville** — APARTMENTS — U. S. Govt., c/o Officer in Charge of Constr., 127 N. Staples St., Corpus Christi, plans by Wm. C. Wood, 743 Wilson Bldg., Corpus Christi, 80 housing duplex apartments for Chase Field. $650,000. H. & M. Eng. Co. (McLendon & Assocs.) 127 N. Staples St., Corpus Christi, consult. engrs.

▲† **Wash., Moses Lake**—RUNWAY—U. S. Eng., 4735 E. Marginal Way, Seattle, Zone 4, strengthen primary runway, Larson Air Force Base $1,961,000. CD 12/17/48.

▲ **Wash., Seattle**—FLIGHT KITCHEN—United Air Lines 5959 S. Cicero St., Chicago, Ill., 2 story 8,500 sq. ft. flight kitchen and hangar addn. at Seattle-Tacoma International Airport. $1,000,000.

▲† **Wash., Spokane**—RUNWAY, etc.—U. S. Eng., 473[illegible] E. Marginal Way, Seattle, Zone 4, reconstr. runway $1,047,000; barracks $338,000; housing $270,000; taxiway $53,000, all at Geiger Air Force Base.

▲† **Wash., Spokane**—SWIMMING POOL, etc.—U. S. Eng., Bldg. 602, City County Airport, Walla Walla, swimming pool $165,000; fuel storage $233,000; refueling unit $157,000, all at Fairchild Air Force Base. CD 10/31/51.

▲ **Ont., Toronto** — RUNWAYS, etc. — City, City Hall imprvt. program for Toronto Island Airport, two 4,000 ft. runways stretching out into Lake Ontario and extension of hangar space and service facilities, $2,500,000. CD 7/24/53.

AMERICANS ABROAD

▲ **Lebanon**—Govt. of Lebanon, Beirut, and Parsons & Harza (Ralph M. Parsons, 617 Olive St., Los Angeles 1, Calif. U. S. A. and Harza Engr. Co., 400 W. Madison St., Chicago, Ill. U. S. A. have cancelled contract for design and supervision of the $40 million Litani River Proj. An error in the translation of the contract omitted some requirements. CD 5/24.

PUBLIC BUILDINGS

Calif., Garden Grove—SCHOOL—Garden Grove High School Dist., pre-cast concrete high school, Dale Ave. near Orangewood Blvd. $900,000. CD 4/18.

Calif., West Covina—SCHOOL—West Covina School Dist., 821 S. Sunset Ave., plans by Flewelling & Moody,

continued on page 151

in Shipbuilding as in other great industries

MILLER WELDERS are preferred

St. Louis Shipbuilding and Steel Co., largest builders of inland towboats in the world, require welds that will withstand a maximum amount of abuse.

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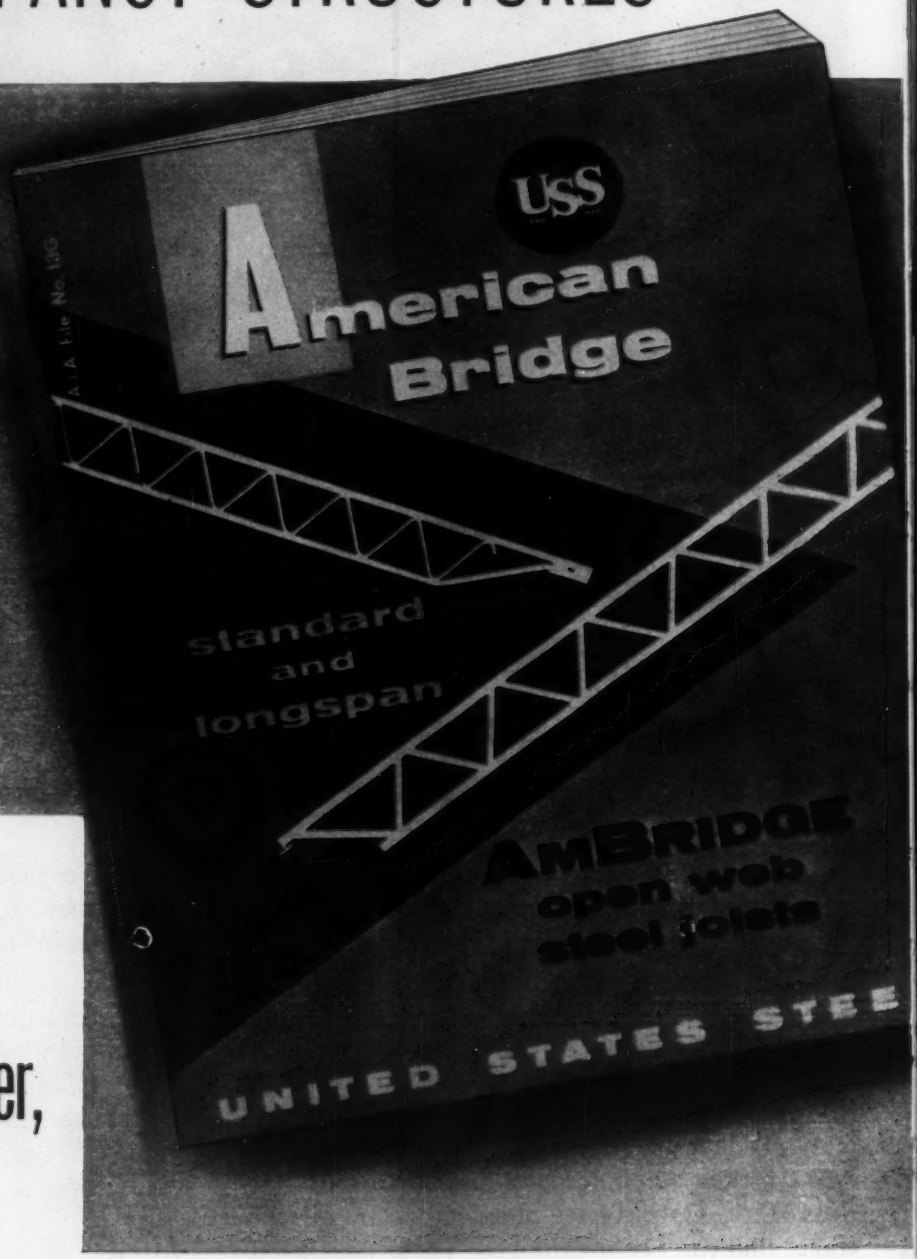

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UNITED STATES STEEL

continued from page 148

3112 Los Feliz Blvd., Los Angeles, California School. $400,000. CD 8/3/53.

Colo., Manitou Springs—SCHOOL—School Dist. No. 14, Court House, bond election July 26, high school, $454,173.

† **Conn., Bridgeport**—TRAINING CENTER—U. S. Eng., 857 Commonwealth Ave., Boston, Mass., army reserve training center. $210,000. Gilbert Small & Co., Inc., 10 State St., Boston, Mass., consult. engr. CD 10/13.

▲ **Conn., Hartford** — AUDITORIUM — City, Carleton F. Sharpe, mgr., 550 Main St., plans by Nimoru Yamasaki, 112 Madison St., Detroit, Mich., municipal auditorium, North Meadows, adjacent to site of new Railroad Station, 9,000-seating capacity. $2,000,000. CD 1/4/49.

Conn., Hartford—WAREHOUSE—City, Mayor's Office, City Hall, warehouse, South Meadows between Wethersfield Ave. and railroad tracks $100,000. Peter H. Frassee & Co., Locust St., lessee.

Conn., Winsted—SCHOOL—Town, Bd. Regional School Dist. No. 7, Supt. Schools, Wetmore Ave., plans by Louis E. Jallade, 597 5th Ave., New York, N. Y. Regional High School, $500,000.

▲ **Conn., Winsted**—SCHOOL—Town Bd. Regional School Dist. No. 7, Wetmore Ave., plans by Louis E. Jallade, 597 Fifth Ave., New York, N. Y., Regional High School Barkhamsted, $1,000,000.

▲† **D. C., Wash.**—HEADQUARTERS—U. S. Atomic Energy Comn., 1901 Constitution Ave. N. W., Zone 25, plans by Voorhees, Walker, Smith & Smith, archt-engr., 101 Park Ave., New York, N. Y. AEC headquarters bldg. in or near here, $10,000,000.

▲† **Ill., Rock Island** — POST OFFICE, etc. — General Services Admin., P. Bldgs. Service, General Services Bldg., Wash. 25, D. C., plans by William Stuhr, 1800 Third Ave., Rock Island, and J. Fletcher Lankton & John N. Ziegele & Assoc., 1100 Main St., Peoria, post office and court house, $2,000,000.

Ind., Highland—HIGH SCHOOL—Town, Highland, plans by Perkins & Will, 309 W. Jackson Blvd., Chicago 6, Ill., high school. $800,000. CD 3/5/53.

Iowa, Churdan—SCHOOL—Bd. Educ., high school and remodeling present high school for use as elementary school, $360,000, bonds voted June 10. CD 7/7.

Iowa, Dallas Center—SCHOOL— Bd. Educ., Dallas Center, plans by Wetherell & Harrison, 506 Shop Bldg., Des Moines, school addn. $350,000. CD 3/4.

Iowa, Fenton—SCHOOL—Bd. Educ., Paul Eigler, secy., plans by Haarstick-Lundgren & Associates, Suite N. 212, First Natl. Bank Bldg., St. Paul, Minn., constr. Central Community High School. $450,000 bond election July 17.

Iowa, Grinnell—SCHOOL—Bd. Educ., Grinnell, plans by Norman Hatton & Assocs., 531 Higley Bldg., Cedar Rapids, elementary school. $400,000.

Ky., Morehead—STUDENT UNION—State, Div. Purchases, Frankfort, plans by Joseph & Joseph, Speed Bldg., Louisville, student union bldg., Morehead State College, $600,000.

▲† **La., Lake Charles**—POST OFFICE—General Services Admin., General Services Bldg., F St. between 18 and 19 Sts. N.W., Wash., D. C., plans by Dunn & Quinn, engrs.-archts., Lake Charles, post office, $2,000,000. CD 12/6/49.

Mass., Concord — SCHOOL — Town, Angelo Gioudrene, supt. schools, Stow St., elementary school, $350,000.

Mass., Middleboro—SCHOOL—Town, School Dpt., plans by Israel T. Almy, 56 N. Main St., Fall River, elementary school, $425,000. CD 4/22/53.

Mass., Swansea—SCHOOL—Town, c/o Supt. Schools, plans by Israel T. Almy, 56 N. Main St., Fall River, high school addn. $525,000.

▲ **Mass., Waltham**—ADMISSION—State, Dpt. Mental Health, c/o Div. Bldg. Constr. 38 Chauncy St., Boston, plans by Shepley-Bulfinch-Richardson & Abbott, 1 Court St., Boston, admissions bldg. Metropolitan State Hospital, $2,000,000. Thompson Eng. Co., 177 State St., Boston, elec. engr. CD 6/10/53.

Mich., Charlotte—SCHOOL—City, Bd. Educ., voted $750,000 bonds June 27, high school addn. CD 5/19.

▲ **Mich., East Lansing**—HEALTH CENTER—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, plans by Ralph Calder, 1212 Kales Bldg., Detroit, health center, Michigan State College. $2,000,000.

Mich., Marquette—SCHOOL—City, elementary school, east side, East Hewitt at Williams Park, $550,000.

Mich., Mount Morris—SCHOOL—City, Bd. Educ., Clarence Scharer, supt. Schools, high school, $725,000.

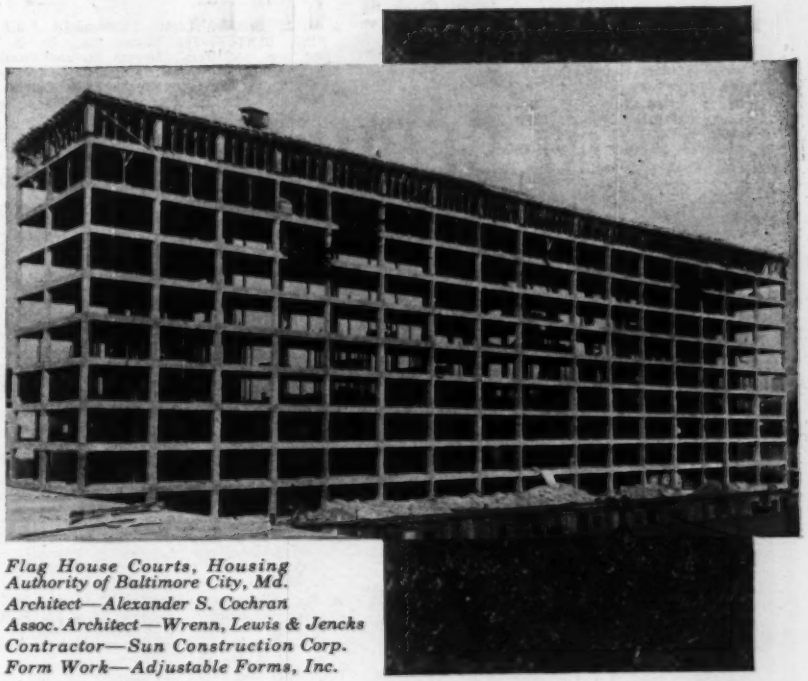
▲ **Mich., St. Clair Shores**—CITY HALL—City, Donald J. Harm, clk., 24800 Jefferson Ave., voted $1,000,000 bonds June 30, city hall.

Neb., Omaha—SERVICE and CONSTRUCTION—Metropolitan Utilities Dist., 18 and Harney Sts., plans by Steele, Sandham & Steele, Electric Bldg., service and constr. bldg. $730,000. Henningson, Durham & Richardson, 292 Harney St., Omaha, Neb., consult. engrs. C. F. Holdrege, c/o owner, ch. engr. CD 6/23.

N. H., Manchester—SCHOOL—City, School Dpt., 88 Lowell St., plans by Dira & Lampron, 922 Elm St., elementary school, Gossler Park, $350,000. John D. Betley, 944 Elm St., assoc. archt. CD 11/17.

N. J., Netcong—HIGH SCHOOL—Bd. Educ., Netcong, plans by Alfonso Alvarez, Jr., 243 Lorraine Ave., Upper Montclair, high school addn. $350,000. CD 6/8.

N. J., Rockaway—SCHOOL—Bd. Educ., Rockaway, plans by Alonzo Alvarez, Jr., school bldgs., W. Main and E. Main Sts. $600,000. Referendum vote on July 12.



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Assoc. Architect—Wrenn, Lewis & Jencks
Contractor—Sun Construction Corp.
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▲ **N. Y., Freeport**—SCHOOL—School Dist. No. 9, constr. high school on 15 acre tract bounded by Merrick Rd., Brookside Ave., Sunrise Hy., and Baldwin City Line, $1,000,000. Proposal for purchase of site approved by voters.

▲ **N. Y., New York**—SCHOOL—Bureau Constr., Bd. Educ., 42-15 Crescent St., Long Island City, Zone 1, plans by Kahn & Jacobs, 2 Park Ave., Zone 16, school of Industrial Art, $7,500,000. CD 3/2.

N. Y., Roslyn—SCHOOL—Roslyn School Dist. No. 3, grade school on 15 acre tract in East Hills Section, $500,000. CD 7/9/47.

▲ **N. Y., Syosset**—SCHOOL—Central School Dist. No. 2, voted $3,900,000 bonds June 22, Junior-Senior High School on 73 acre site on South Woods Rd., Eggers & Higgins, 100 E. 42 St., New York 17, N. Y., archts. CD 5/12.

N. Y., Thornwood—SCHOOL—Bd. Educ. plans by Knappe & Johnson, 380 E. 150 St., New York, Zone 55, Elementary and Junior High School, $800,000. Bids in October.

▲ **Oklahoma**—RESTAURANT—Oklahoma Turnpike Auth., 321 N.E. 24 St., Oklahoma City, restaurant and dining room to be built over the Turnpike near Vinita, Craig Co. $1,000,000. DeLeuw Cather & Co., 321 N.E. 24 St., Oklahoma City, consult. engrs. CD 6/22/50, under Streets and Roads.

▲ **Pa., Beaver**—HOME and HOSPITAL—Comr. Beaver Co., Court House, plans by Michael Baker & Jos. F. Bontempi Assocs., Rochester, brick, steel county home and hospital, Brighton Twp. $2,500,000.

Tex., Baytown — SCHOOL — Goose Creek Independent School Dist., Baytown, voted bonds June 25, elementary school in northeast Baytown area. $480,000.

Tex., Beaumont—FIRE STATION—City, City Hall, central fire station, $400,000.

Tex., Floydada—HIGH SCHOOL—Floydada Independent School Dist., Floydada, plans by Herbert Brasher & Assocs., 1626 13th St., Lubbock, high school. $400,000.

Tex., Woodville—SCHOOL—Woodville Independent School Dist., Woodville, school. $450,000.

Wash., Mount Vernon—SCHOOL—School Bd., Mount Vernon, Jefferson Eleemntary School. $400,000.

▲† **Wis., Green Bay**—POST OFFICE—Public Bldgs. Admin., F St. between 18 and 19 Sts., Wash. 25, D. C. plans by Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Post Office Bldg., $1,900,000.

▲† **Wis., Green Bay**—POST OFFICE—General Services Admin., Public Bldgs. Service, F St. between 18 and 19th Sts., Wash. 25, D. C., plans by Foeller, Schober, Berners, Stafford & Jahn, Green Bay, constr. Post Office and Federal Office Bldg., $1,615,000. CD 12/5/49.

Wis., Milwaukee—SCHOOL—School Bd., 111 N. 10th St., plans by Ebling, Plunkett & Reymar, 1220 N. Milwaukee St., elementary school, N. 82nd and W. Nash Sts., $900,000. CD 6/15.

▲ **Wis., Shawano**—COURT HOUSE—Shawano Co., plans by Foeller, Schoeber, Berners, Safford & Jahn, 310 Pine St., Green Bay, 2 story, bsmnt., court house. $1,260,000.

Ont., New Toronto—SCHOOL—Lakeshore Dist. Bd. Educ., 845 Lakeshore Rd., John English School addn., in Mimico. $700,000. CD 11/7/52.

▲ **Ont., Toronto**—JAIL—Municipality of Metropolitan Toronto, 67 Adelaide St. E., plans by Barnett & Rieder, 644 Bayview Ave., 5 story, bsmnt., U-shaped Don Jail addn., two wings approx. 55x155 ft. each, adioining sect. approx. 42x55 ft., rein.-con. fdn., lift-slab constr., precast concrete reinforced curtain wall. $1,500,000. Wallace, Carruthers & Assocs., Ltd., 35 Isabella St., consult. engrs. CD 3/30.

COMMERCIAL BUILDINGS

▲ **Ala., Birmingham**—OFFICE—Alabama Power Co., Alabama Power Bldg., constr. office. $1,500,000.

▲ **Calif., Marysville**—HOSPITAL—Rideout Memorial Hospital, "H" St., hospital wing to existing bldg. $1,000,000.

Calif., San Mateo—STORE—Safeway Stores, Inc., c/o Bramwell Constr. Co., 366 Grand Ave., Oakland, store. $600,000.

▲ **Calif., Van Nuys**—DWELLINGS—Donien Development Co., 5171 W. Washington Blvd., Los Angeles, 125 frame, stucco dwellings, Vincennes between Odessa and Woodley Ave. $1,306,000.

▲ **Calif., West Covina**—DWELLINGS—Fairgrove Builders, c/o Edward H. Fickett, archt., 5657 Wilshire Blvd., Los Angeles, 200 frame, stucco dwellings. $2,000,000.

▲ **Colo., Colorado Springs**—HOSPITAL—Sisters of Charity of Cincinnati, N. Cascade Ave., plans by Fisher, & Fisher, archts.-consult. engrs., Denver Natl. Bldg., Denver, 12 story Glockner-Penrose Hospital. $5,500,000.

Ind., Kokomo—SHOPPING CENTER—Columbian Club of Kokomo, Inc., Charles Merten, pres., c/o Knights of Columbus, 110½ W. Mulberry St., 10 store shopping center, West Kokomo, across from St. Joseph Hospital. $350,000.

Iowa, Oakdale—State Bd Control, Des Moines, kitchen, dining room, and patients rooms, $474,000; power plant improvements and extensions, $261,750, at State Sanitarium.

Mass., Brookline—APARTMENTS—Lester Delaney, 137 Brighton Ave., Allston, plans by Saul E. Moffie, 27 School St., Boston, apartments, 24 suites, each, Lawton St. $400,000.

▲ **Minn., Brooklyn Center (Minneapolis P.O.)**—SHOPPING CENTER—The Dayton Co., B. B. Dayton, vice pres. and treas., Seventh St. and Nicollet Ave., Minneapolis, Northdale Shopping Center on tract bounded by Hy. 100, Shingle Creek County Rd. 10, and line 225 ft. east of Hy. 152 (Osseo Rd.), $10,000,000.

▲ **Minn., South St. Paul**—HEADQUARTERS—Farmers Union Central Exchange, Inc., E. A. Syfiestad, gen. mgr., 1200 N. Concord St., plans by Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, headquarters. $1,000,000.

Mont., Missoula—SHOPPING CENTER, etc.—W. G. Tremper, Missoula, shopping center, parking area. $400,000, completion by summer 1956.

N. J., Hawthorne—RECTORY, etc.—St. Anthony's Catholic Church, 276 Diamond Bridge Ave., plans by Fanning & Shaw, 49 Ward St., Paterson, rectory and addn. to school. $700,000.

N. J., Passaic—SCHOOL—Pope Pius XII, Diocesan High School, First St., plans by Fanning & Shaw, 49 Ward St., Paterson, school addn. $900,000.

▲ **O., Englewood**—HOMES—Fred Geyer, 17 Lawn St., Dayton, 200 homes in Union, near here. $1,000,000.

Okla., Oklahoma City—OFFICE—Sohio Petroleum Co., Skirvin Tower, plans by Sorey, Hill & Sorey, 809 N. W. 36 St., 65,000 sq. ft. office, N. W. 50 and Ross Sts. $500,000. R. W. French, c/o owner, engr.

▲ **Okla., Tulsa**—OFFICE, etc.—Continental Baking Co., 630 Fifth Ave., New York, N. Y., plans by Leon B. Senter, Philtower Bldg., office bldg. and plant, 11th and Sheridan Rd. $1,250,000.

▲ **Okla., Tulsa**—SHOPPING CENTER—A. I. Jacobson, 3600 S. Cincinnati St., plans by Paul Murphy, Utica Square, shopping center, S. Cincinnati and 36 Sts. $1,000,000.

▲ **Pa., Cheltenham**—APARTMENT—Harry K. Madway & Bernard Weinberg, 2409 N. Broad St., Phila., plans by John Hans Graham & Assoc., 2430 Penna Ave. N. W., Wash., D. C., apartment, York Rd near Meeting House Rd. $2,500,000.

Pa., Phila.—HOSPITAL—Lankenau Hospital, City Line and Lancaster Ave., plans by Vincent Kling, 917 Corinthian Ave., rehabilitation bldg. $500,000.

Pa., Phila.—SCHOOL—Owner, c/o Frank L. Petrillo, archt., 6406 Cobbs Creek Parkway, private school in west section of city, $600,000.

▲ **Pa., Pittsburgh**—DEPARTMENT STORE—McKnight Shopping Center, Inc., 7 Whitworth St., plans by Flannery & Assoc., 3528 Forbes St., 1 story, brick block, steel department store, McCandless Twp., $1,000,000, Jos. Horne Co., lessee.

▲ **Tex., Dallas**—APARTMENTS—Corthrum-Murray Co., Inc., c/o W. H. Cothrum, 2116 N. Field St., Unit No. 1, 40 apartments, $400,000; Unit 2, 35 apartments, $385,000; Unit 3, 45 apartments, $425,000, vicinity of Garland Rd. and Jupiter Lane.

Tex., El Campo—CHURCH—First Methodist Church, El Campo, plans by Edw. Bodet, 3415 Montrose Blvd., Houston, 30,000 sq. ft. masonry church. $350,000. Walter P. Moore, 2 Pinedale St., Houston, and Joe A. Poole, 2506 Richton St., Houston, consult. engrs. CD 6/18/52.

Tex., Galveston—OFFICE—Texas Prudential Insurance Co., 21 and 22 Sts., plans by Charles L. Zwiener, 310 Cotton Exchange Bldg., masonry office addns., remodeling. $350,000. Walter P. Moore, 2 Pinedale St., Houston, and Bernard Johnson & Assocs., 4926 Travis St., Houston, consult. engrs.

Tex., Lubbock—SHOPPING CENTER—Avenue H and 34th St. Development Co., c/o Preston M. Johnson and/or G. C. Harston, 3601 38th St., plans by G. R. Billingsley, Lubbock Natl. Bank Bldg., 50,000 sq. ft. brick, hollow tile, steel shopping center (2nd unit). $350,000.

Tex., McAllen—MOTEL—Fairland Land and Motel Corp., c/o Bill Wilson, McAllen, plans by John G. York, 1202 S. 15 St., Harlinger, 50-unit motel, rein.-con. swimming pool, restaurant; underground utilities, paved streets, etc. $350,000. CD 5/5.

Tex., Port Neches—DWELLINGS—A. G. Cromwell & Don Elliott, Port Neches, 30 frame dwellings, $360,000; 35 frame dwellings, $377,000.

Tex., San Antonio—DWELLINGS—N. O. Simmons Building Co., Box 5201, Beacon Hill Station, 32 frame dwellings, $350,000; 30 frame dwellings, $365,000, on Northside.

Tex., San Antonio—DWELLINGS—Rosenthal Bros., 200 Jeanette St., 40-frame dwellings. $360,000.

Tex., San Antonio—BANK, etc.—Owners, c/o C. L. Skaggs, pres., 2600 McCullough Ave., plans by Reginal Roberts, 2600 McCullough Ave., bank and office, Main and Euclid Ave. $350,000. R. Marvin Shipman, 146 W. Olmos Dr., consult. engr.

Wis., La Crosse—OFFICE—Trane Co., 206 Cameron Ave., plans by Schubert, Sorensen & Assoc., 308 Hoeschler Bldg., 122x440 ft. concrete, steel, concrete block, office bldg.

Ont., Barrie—YOUTH CENTRE—Trinity Anglican Church, Collier St., plans by Harold O. Moore, 11 Owen St., youth centre. $130,000.

Ont., Niagara Falls—HOTEL—Owner c/o Norman A. Kearns, archt., 46 Main St. E., Welland, 100-room hotel, on Clifton Hill. $572,000. CD 12/15.

Ont., Toronto—APARTMENT—H. Lederman & J. Verina, 154 Regina Ave., 10 story, masonry, steel, rein.-con. apartment, bsmnt., garage and detached garages at rear on Carlton St. $720,000.

Ont., Toronto—APARTMENT—J. Ennis, 605 Briar Hill Ave., 10 story, bsmnt., brick, rein.-con., steel apartment, Tyndall Ave. $400,000.

INDUSTRIAL BUILDINGS

Ala., Tuscaloosa—PLANT—Reichhold Chemicals, Inc., Tuscaloosa, 100 ton sulfuric acid plant addn. $800,000.

Calif., Anaheim—WAREHOUSE—Kwikset Lock Co., 516 E. Santa Ana, 1 story, 150x300 ft. rein.-conc. warehouse, $150,000, Wm. J. Moran, 1100 S. Fremont Ave., Alhambra, consult. engr.

Conn., East Norwalk—PLANT—Automatic Signal Div. Eastern Industries, plans by Irving Rutherford, 49 Garden St., plant, $120,000.

Conn., Elmwood—WAREHOUSES—The 635 Corp., c/o Pasquale Mancino, 635 New Park Ave., Elmwood, 2 warehouses, $200,000.

▲ **Conn., Hartford**—LABORATORY, etc.—The Underwood Corp., 581 Capitol Ave., 1 story, 1,000,000 sq. ft. brick research laboratory and office, Brainerd Field. $9,000,000.

Conn., Meriden—PLANT—International Silver Co., 48 State St. E., plant, S. Broad St. $100,000.

▲ **Conn., Norwalk**—POWER PLANT—Connecticut Light & Power Co., Selden St., Berlin, plans by Kahn & Jacobs, 2 Park Ave., New York 16, N. Y., steam generating power plant on Manresa Island. $20,000,000. CD 9/3/52.

Conn., Wallingford—FACTORY—The Revere Corp. of America, 48 Elm St., plans by Irving Rutherford, 49 Garden Court, Hartford, 2 story, 100x100 ft., steel and masonry factory addn. $120,000.

▲ **Iowa, Bettendorf**—PLANT—Aluminum Co. of America, 230 Park Ave., New York, N. Y., plant expansion at Riverdale, RFD from here. $20,000,000. CD 7/17/52.

Mass., Dedham—PLANT—Hersey Mfg. Co., Walter A. Hersey, pres., 381 "E" St., South Boston, 130,000 sq. ft. plant Rustcraft Rd. and Elm St., off Rte. 128, $200,000.

▲ **Mich., Kalamazoo**—PLANT—New York Air Brake Co., Dudco Div., 1796 E Nine Mile Rd., Hazel Park, freight car brakes plant, 95 acre site, $6,000,000.

Mo., St. Joseph—WAREHOUSE—Hillyard Chemical Co., 402 N. Third St., plans by Eugene Meier, 816 N. 11 St., warehouse addn. $175,000.

Mo., St. Louis—WAREHOUSE—Grocers Terminal Warehouse Co., 3401 Chouteau Ave., Zone 3, 1 story, 40,000 sq. ft. warehouse, erected on 60,000 sq. ft. site on Frisco Ry. tracks east of Macklind Ave. $100,000.

Neb., Nebraska City—GRAIN TERMINAL—Cargill, Inc., Grain Exchange Bldg., Minneapolis, Minn., river-rail-highway grain terminal. $100,000.

▲ **N. J., Bound Brook**—LABORATORY—Bakelite Co., River Rd., plans by Fellheimer & Wagner, 155 E. 42 St., New York 17, N. Y., 4 story research laboratory, 16-acre tract off New Market Rd. $2,000,000.

▲ **N. C., Carlisle**—PLANT—Cone Mills Corp., Proximity, Greensboro, textile finishing plant, 1,000-acres on Broad River. $5,000,000. J. E. Sirrine Co., 215 S. Main St., Greenville, S. C., consult engr.

▲ **O., Columbus** — PLANT — General Motors Corp., Ternstedt Div., 6307 W. Fort St., Detroit, Mich., 625,723 sq. ft. automotive hardware mfg. plant addn., office, power house, waste disposal plant $6,000,000.

Okla., Oklahoma City—LABORATORY—Black, Sivalls & Bryson, Inc., 7500 E 12 St., Kansas City, Mo., research and testing laboratory, Council Rd. $600,000. Henry Raysser, c/o owner, engr.

▲ **Okla., Oklahoma City** — FEED MILLS EXPANSION Superior Feeds, Inc., 2100 S. Robinson St., plans by Bailey & Bozalis, Colcord Bldg., feed mill expansion, S. Robinson St. $1,000,000.

▲ **Ore., Oswego**—PLANT—Oregon Portland Cement Co., 111 S. E. Madison St., Portland, cement plant addn. $5,000,000.

▲ **Pa., King of Prussia**—WAREHOUSE, etc.—William Montoomery Co., 999 N. Second St., Phila., plans by Robert Montgomery Brown, 1728 Spruce St., Phila., warehouse and office. $2,000,000. CD 3/9, under Commercial Buildings.

Pa., Phenixville—PLANT—Maplecraft Farm Dairies, King of Prussia, plans by John V. Hoey, Norristown, processing plant, refrigeration plant and office, $100,000.

▲ **Pa., Youngwood**—Plant—Westinghouse Electric Corp., 401 Liberty Ave., Pittsburgh, 1 and 2 story, steel, metal, masonry mfg. plant. $5,000,000.

R. I., Providence — WAREHOUSE — American Waste Paper Co., 24 Washington St., plans by Dimitri & Dimitri, 17 Exchange St., 100x100 ft., 33x46 ft. warehouse, 11th and Pomaganset Aves. $100,000.

Tex., Corpus Christi — WAREHOUSE — Groce-Wearden Co., McBride Lane, concrete masonry warehouse, $110,000. Blucher & Naismith, Inc., 128 Mesquite St., consult. engr.

Tex., Fort Worth—WAREHOUSE—Roy Lawless, 221 E. Vickery Blvd., 135x185 ft. rein.-con. warehouse, $100,000.

Tex., Fort Worth—LABORATORY—Alcon Laboratories, Henderson, plans by John W. Floore, 1401 W. Lancaster St., pharmaceutical laboratory at SW Loop and NS Freeway. $500,000

Wis., Clintonville—FACTORY—Greater Clintonville, Inc., c/o Utility Tool & Body Co., Marion, 1 story, 80x250 ft. factory.

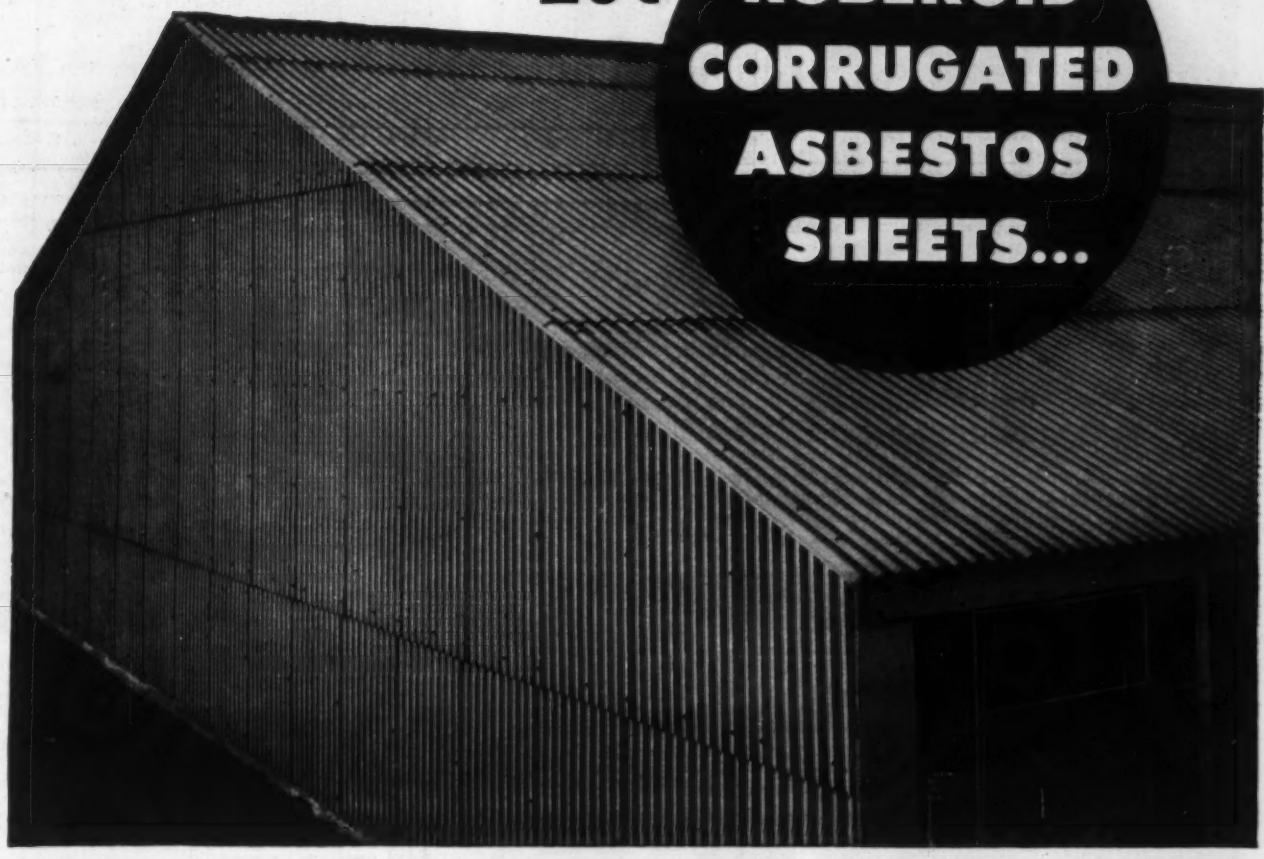
Wis., Neenah — PAPER MILL — Neenah Paper Co., Neenah, 2 story, 60x209 ft. paper mill addn.

Wis., Wisconsin Rapids — WAREHOUSE — Consolidated Water Power & Paper Co., Wisconsin Rapids, warehouse addn., $400,000.

Alaska, Big Delta—PLANT—Alaska Royal Crown Canning Co. c/o R. Groseclose, Fairbanks, plans by Alaska Arch. & Eng. Co., Box 509, Fairbanks, 1 story,

continued on page 154

Let RUBEROID CORRUGATED ASBESTOS SHEETS...



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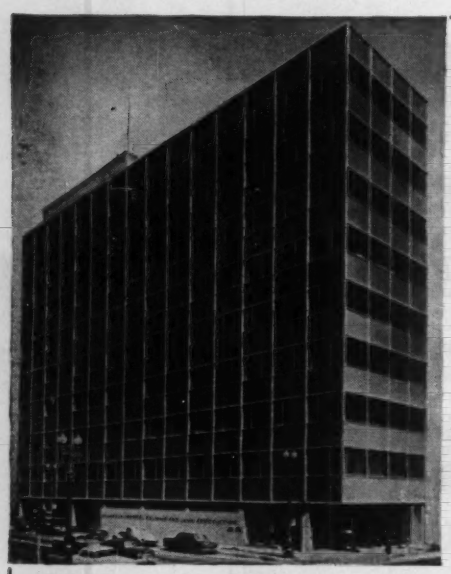
SALT LAKE CITY, UTAH—1674 Beck St.

ASPHALT AND ASBESTOS BUILDING MATERIALS



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Los Angeles, Calif.

ARCHITECT & ENGINEERS
Welton Becket, F.A.I.A. & Assoc.

CONTRACTOR
C. L. Peck, Los Angeles

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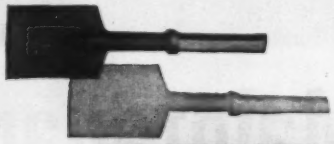

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Sweeten Creek Road, Asheville, N. C.

Brunner & Lay Corp.
660 N. Tillamook St., Portland 12, Ore.

continued from page 152

part bsmnt., 40x100 ft. steel, rein.-con. soft drink canning plant. $200,000.

Ont., Strathroy — PLANT — Mueller Brass Co., Port Huron, Mich., U. S. A., plans by J. Fred Green, 544 Talbot St., St. Thomas, 11,400 sq. ft. mfr. space, 60x190 ft. factory sect., 22x180 ft. office bldg. $300,000.

Ont., Toronto—STORAGE DEPOT—Canadian Petrofina, Ltd., 21 Richmond St. W., storage depot for gasoline, incl. small office and warehouse. $500,000.

UNCLASSIFIED

Alabama—RURAL DISTRIBUTION LINES—Southern Pine Elec. Co-operative, Brewton, 130 mi. rural distr. line and system imprvs.. Conecuh Co. $690,000. CD 7/3/51.

▲† Ariz., Fort Huachuca—ROADS, etc.—U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif., roads for fort and trailer court, $560,000; fixed wing hangar, $250,000; two 1 story, concrete block battalion headquarters bldg., $95,000. Headman, Ferguson & Carollo, 3308 N. 3 St., Phoenix, consult. engrs.

▲ Arkansas — RURAL DISTRIBUTION LINES — Woodruff Electric Co-operative, Corp., Forrest City, 250 mi. rural distr. line and system imprvs., Woodruff Co. $1,000,000.

† Conn., Bridgport—A. R. TRAINING CENTER—U. S. Eng. 857 Commonwealth Ave., Boston, Mass., A. R. Training Center, $100,000, Gilbert Small & Co., Inc., 10 State St., Boston, Mass., engr.

Georgia—RURAL DISTRIBUTION LINES—Canoochee Elec. Membership Corp., Reidsville, 73 mi. rural distr. line and system imprvs., Tattnall Co. $400,000. CD 11/7/52.

▲ Idaho—RURAL DISTRIBUTION LINES—Northern Lights, Inc., 204 Main St., Sandpoint, 125 mi. electrical distr. lines, $1,739,000. CD 7/12/51.

Kansas—RURAL DISTRIBUTION LINES—Sekan Electric Co-operative Assn., Girard, 38 m. rural distr. lines, two new substations, 15 mi. 69 KV transmission line, sys. imprvs. Crawford Co. $680,000. CD 2/27/50.

Kansas—RURAL DISTRIBUTION LINES—Victory Electric Co-operative Assn., Dodge City, 109 mi. rural distr. lines, sys. imprvs., Ford Co. $578,000. CD 5/26/50.

† Mass., Springfield — AIR RESERVE CENTER — Air Force Reserve, Army Base, 666 Summer St., South Boston, air reserve center, Bay St. and Berkshire Ave. $250,000.

▲ Missouri — RURAL DISTRIBUTION LINES — Co-Mo Electric Co-operative, Tipton, 64 mi. rural distr. lines, 3 new sub-stations, 23 mi. 33 KV transmission lines, sys. imprvs., Cooper Co., $1,020,000. CD 12/5/51.

N. M., Roswell—TV TOWER—KSWS-TV, c/o John A. Barnett, Roswell, 1,610 ft. TV tower, $200,000.

▲ North Dakota—GAS PIPE LINE—Montana-Dakota Utilities Co., 831 2nd Ave. S., Minneapolis, Minn., 100 mi. 12 in. pipe line to carry natural gas pipe line from the Tioga oil field in North Dakota to Minot and Williston. $5,000,000.

▲† Okla., Pryor—PRODUCTS FACILITIES—U. S. Eng., Box 61, Tulsa, Zone 2, plans by Chemical Constr. Co., archt.-consult. engr., 525 W. 43 St., New York, N. Y., new products facilities, Oklahoma Ordnance Plant. $21,000,000.

Tennessee—RURAL DISTRIBUTION LINES—Caney Fork Electric Co-operative, McMinnville, 138 mi. rural distr. lines, sys. imprvs., Warren Co. $925,000. CD 10/31/46.

Texas—RURAL DISTRIBUTION LINES—Erath County Electric Co-operative Assoc., Stephenville, 60 mi. rural distr. lines, sys. imprvs., Erath Co. $270,000.

Texas—RURAL DISTRIBUTION LINES—New Era Electric Co-operative, Athens, 69 mi. rural distr. lines, sys. imprvs., Henderson Co. $285,000.

Texas—RURAL DISTRIBUTION LINES—Pedernales Electric Co-operative, San Marcos, rural distr. lines, sys. imprvs., Hays, Blanco, Bell, Travis, Comal, Llano, Gillespie, Havs, San Saba, Lampasas and Williamson Counties, $290,000.

Texas—RURAL DISTRIBUTION LINES—Sam Houston Electric Co-operative, Livingston, rural distr. lines, sys. imprvs., Polk Co. $725,000. CD 8/27/52.

Texas—RURAL DISTRIBUTION LINES—Wise Electric Co-operative, Decatur, 100 mi. rural distr. lines, sys. imprvs., Wise Co. $240,000.

Tex., Beaumont—PARKS—City, City Hall, municipal parks, $650,000.

Tex., Dallas—STADIUM—State Fair Assn., c/o State Fair Grounds, 5,000-addnl. "Cotton Bowl" seats. $250,000. Chappell & Brenneke, Burt Bldg., consult. engrs. CD 10/4/51.

Utah, Magna—GOLF COURSE etc.—Kennecott Copper Corp., Kearns Bldg., Salt Lake City, plans by Butch W. Beall, Jr., Dooly Bldg., Salt Lake City, 9-hole golf course, club house, dance hall, picnic hall. $100,000.

Virginia—RURAL DISTRIBUTION LINES—Community Electric Co-operative, Windsor, 49 mi. rural distr. lines and sys. imprvs., Nansemond Co. $700,000. CD 9/13/51.

Wyoming—RURAL DISTRIBUTION LINES—Hot Springs Rural Electric Assoc., Thermopolis, 239 mi. rural distr. lines; 24 mi. 34.5 KV transmission line, two sub-stations and sys. imprvs., Hot Springs Co. $845,000. CD 11/28/50.

Ont., Timmins—TELEVISION STATION—J. Conrad Lavigne, 192 Toke St., plans by Rudolph J. Papanek, 185 Third Ave., television station for CFCL. $350,000.

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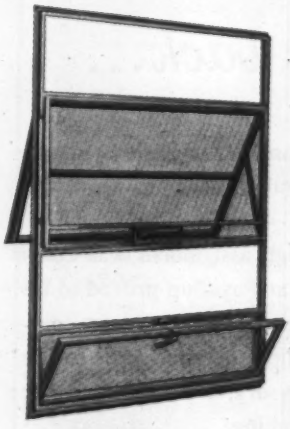

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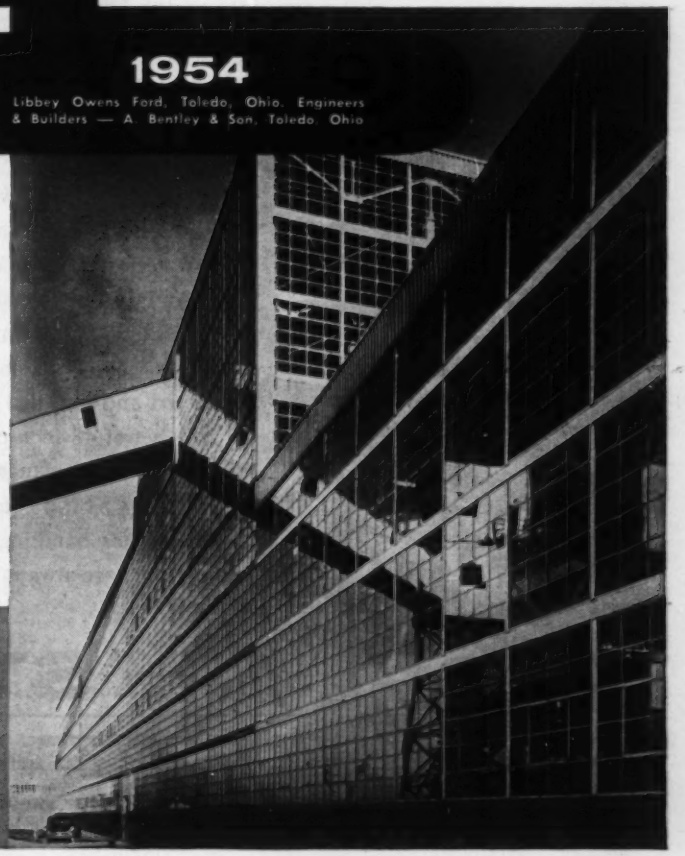
See Bayley in Sweet's. Complete catalogs on aluminum windows, 16a/Bay; steel windows, 16b/Ba.

1954

Libbey Owens Ford, Toledo, Ohio. Engineers & Builders — A. Bentley & Son, Toledo, Ohio



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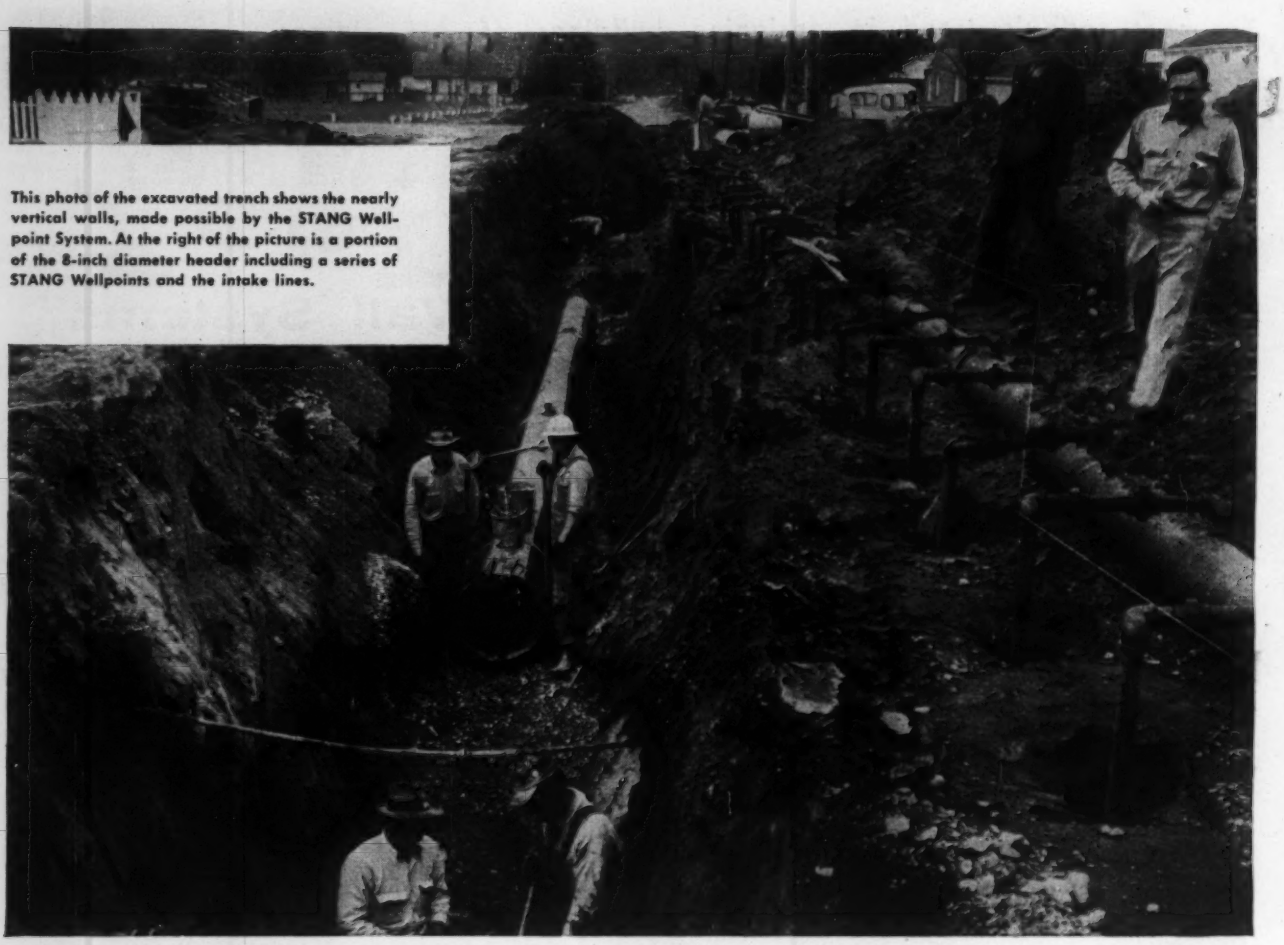

This photo of the excavated trench shows the nearly vertical walls, made possible by the STANG Wellpoint System. At the right of the picture is a portion of the 8-inch diameter header including a series of STANG Wellpoints and the intake lines.

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Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
STREETS AND ROADS
July 26 Massachusetts

BUILDINGS—BA

Me., Orono — DORMITORY — BA 7/27 — University of Maine, Admin. Office, women's dormitory, dining facilities. $350,000. Plans deposit $50, refundable. Alonzo J. Harriman, Inc., 292 Court St., Auburn, archt. CD 6/8.

HEAVY CONSTRUCTION—LB & CA

▲† **The Ferber Co.**, 16 Johnson Ave., Hackensack, N. J. LB $1,610,494, Special AAA Facilities, Bristol and Coventry, No. 19-016-55-165, RHODE ISLAND. U. S. Eng., 856 Commonwealth Ave., Boston, Mass. Bids July 12. CD 6/23.

Trimont Bituminous Products Co., 1840 Parkway, Everett, Mass. LB $89,345, est. $90,000. S.A.M.B. 90 crack filling pavement repairs, seal coating, Runways 15-33, Logan International Airport, EAST BOSTON, MASS. State, State Airport Management, Logan International Airport, East Boston, Mass. CD 4/26.

A. Salvatore & Son, 455 Wethersfield Ave., Hartford, Conn. LB $224,851. sewers Albany Ave., Adams St., HARTFORD, CONN. Bd. Contg. & Supply, Metropolitan Dist., 115 Broad St., Hartford, Conn.

BUILDINGS—LB & CA

Consolidated Constructors, Inc., 21 E. 40 St., New York, N. Y., CA $423,772. DORMITORY, end of Parade Ground, Proj. Vt-43-CH-3, NORTHFIELD, VT. Norwich University, E. N. Harmon, pres., Northfield, Vt. Milton L. Crandall, 10 Broad St., Glen Falls, N. Y., archt.

Kelton O. Potter, 50 S. Main St., Bellingham, Mass. Separate Contracts. $400,000. RESIDENTIAL DEVELOPMENT, Scott Hill Gardens, BELLINGHAM, MASS.

Davis Constr. Co., Inc., 687 Boylston St., Boston, Mass. LB $184,320. M-610 Contr. 4, POWER PLANT imprvs., Items 1 and 2, State Hospital, FOXBORO, MASS. State, Dpt. Mental Health, c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids July 8. CD 6/22.

Petrell Land & Development Corp., Hanover, Mass. Separate Contracts. $350,000. 25-30 RESIDENCES, Cape Cod style, HANOVER, MASS.

Country Side Homes, Inc., 12 Westview Dr., Norwood, Mass. Separate Contracts. $500,000. REAL ESTATE DEVELOPMENTS in and near NORWOOD, MASS.

Stivaletta Realty Trust, East Cross St., Norwood, Mass. Separate Contracts. $350,000. 23 RESIDENCES, off East Cross St., NORWOOD, MASS. CD 2/14.

Cossette & Son, Rockland, Mass. Separate Contracts. $360,000. 28 RESIDENCES, Webster Acres, ROCKLAND, MASS.

Leonard Hugo, Inc., 30 Huntington Ave., Boston, Mass. LB $547,000. Northwest Elementary SCHOOL, Lincoln St., WALTHAM, MASS. City, 55 School St., Waltham, Mass. Bids July 8. CD 6/13.

Wadhams & May Co., 15 Lewis St., Hartford, Conn. CA Est. $350,000. CHURCH, Church St. between Park and Locust Sts., MANCHESTER, CONN. St. Mary's Episcopal Church, 103 Church St., Manchester, Conn. Bids June 6. CD 6/2.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 5, 26 Pennsylvania
STREETS AND ROADS
August 5, 12 Pennsylvania

Md., Baltimore—BA 7/27—City, Bureau Sewers, 312 Municipal Bldg., Zone 2, Contr. 433, sanitary sewer. Plans deposit $5, John J. Hunt, c/o owner, sewage engr. CD 11/9.

N. Y., Poughkeepsie—BA 8/1—Aubrey B. Coons, comr. Finance, City Hall, Contr. No. 3, Trunk Sewer No. 4 in South Ave. from city line to north, incl. approx. 2,800 lin. ft. 24- to 33-in. sewers, appurtenances. Plans deposit $5; Contr. 1, storm water sewers in Vassar Lake Drainage area, incl. approx. 2,668 lin. ft. 42- to 78- in. rein.-con. culvert pipe sewer, appurtenances. Plans deposit $5. O'Brien & Gere, 400 E. Genesee St., Syracuse, Zone 2, engrs.; adv. ENR 7/21. CD 11/29/45.

New York—BA 8/9—The Power Authority of the State of New York, 270 Broadway, New York, Zone 7, furnishing, del. 15 KV metalclad switchgear and appurtenances, Spec. No. PA-5-14025, St. Lawrence Contr. P18. Plans deposit $10. Uhl, Hall & Rich, 230 Congress St., Boston 10, Mass., engrs. CD 8/18.

† New Jersey—AAA—BA On Or About 8/11—U. S. Eng., 111 E. 16 St., New York, N. Y., seeding at three special AAA sites, New York Defense area, South Amboy, Plainfield and Morristown, Serial No. ENG-30-075-56-9. $10,000-$25,000. Plans deposit $10. CD 6/14.

BUILDINGS—BA

Pa., Phila.—CHAPEL etc.—BA 8/10—General State Auth. 18 and Herr Sts. Harrisburg, chapel and auditorium at Phila. State Hospital, $700,000. Plans deposit $10. Nolan & Swinburne, 1649 N. Broad St., Phila., archts. A. F. Jones, c/o owner, ch. engr. CD 3/8/54.

N. J., Pennsauken—SHOP—Bids Asked—Haddon Tool Co., Pennsauken, tool shop addn. $95,000. William Dean Faint, 1915 Browning Rd., archt.

BUILDINGS—SLC

Pa., Phila.—GARAGE—Garden Parking Co., 400 N. 15 St., soon lets contract garage addn., Broad & Wood Sts., $95,000, Matthew Erlich & Ezekiel Levinson, 1 N. 13 St., archts.

HEAVY CONSTRUCTION—LB & CA

Thompson-Starrett Co., Inc., 254 W. 54 St., New York 19, N. Y. LB $993,299. Contr. 442, Margaretville-Arkville sewage treatment plant, consisting of control bldg., digester bldg., 2 primary settling tanks, 4 sludge drying beds in glass enclosure, sludge lagoon, filter dosing tank, 6 intermittent sand filter beds, water supply sys., unsewered wastes tanks, outlet sewer and various equip., systems of piping, other appurtenances, required for operation and control of plant bldg., superstructures will have brick walls with flat roofs of rein.-con. slabs, 1,720 ft. 15 in. outfall sewer, 1,800 ft. access road, with paved width of 18 ft., NEW YORK. Bd. Water Supply, 120 Wall St., New York, N. Y. Bids July 12. CD 6/20.

† **Ferber Co.**, 16 Johnson Ave., Hackensack, N. J. LB $352,275. Schedule 1 airmen's dormitory, BOQ, FY-55, Stewart Air Force Base, NEWBURGH, N. Y. U. S. Eng., 111 E. 16 St., New York 3, N. Y. Bids July 7. CD 6/14.

Blanding Constr. Co., 303 Chester Ave., Moorestown, N. J., LB $244,011, sewage treatment plant and sewers. Contr. W-15, Areas 6S and 6N, Hamilton Twp., Mercer Co., NEW JERSEY. New Jersey Turnpike Auth. Admin. Bldg., New Brunswick, N. J. Bids July 7. CD 6/24.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

S. J. Groves & Sons Co., U. S. Hy. No. 9, Woodbridge, N. J. CA $905,938. divided hy. constr. Rte. U. S. 46, Hackettstown-Drakestown, Morris Co. CD 6/30, under LB.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

Geo. M. Brewster & Son, Bogota, N. J. CA $518,271. Hackensack River Bridge, New Milford-Teaneck Twp., Bergen Co. Bids June 21. CD 6/3, under Streets and Roads.

NEW JERSEY—State Hy. Dpt., State Hy. Office Bldg., 1035 Parkway Ave., Trenton,

N. J.—**Winans Contg. Co.**, 601 Elizabeth Ave. W., Linden, N. J. CA $179,734. Terrill Rd. in Plainfield, Fanwood, Scotch Plains, Union Co. Bids June 21. CD 6/3.

Ole Hansen & Son, Inc., 22 N. Franklin St., Pleasantville, N. J. LB $341,006, Absecon Inlet Jetty exten., Proj. 446, ATLANTIC CITY, N. J. Dpt. Conservation & Economic Development, 1020 Broad St., Newark, N. J. CD 11/17.

▲† **Dean Constr. Co., Inc.**, 29-28 41 Ave., Long Island City 1, N. Y. CA $1,097,335. 4 organizational maintenance shops, 3 squadron operations bldg., one combined maintenance shop, one transient maintenance bldg., pilot proficiency bldg., washrack utility bldg., related site imprvs., utilities, McGuire Air Force Base, WRIGHTSTOWN, N. J. U. S. Eng., 2635 Abbottsford St., Phila., Pa. CD 7/7, under LB.

Phila. Transportation Co., 1405 Locust St., Phila., Pa. CA $80,000. repaving Frankford Ave., PHILA., PA. Procurement Dpt., City Hall Annex, Phila., Pa. Howard Hipwell, c/o owner, engr. CD 10/30/44.

W. F. Wilson, Brookville, Md. LB $79,011. sanitary sewers Druid Hill Park, BALTIMORE, MD. City, Bureau Sewers, 312 Municipal Bldg., Baltimore 2, Md. CD 6/22.

Trinity Building & Constr. Co., 4420 E. Eager St., Baltimore 5, Md. LB $111,532. Hy. Contr. 1364, c. conc. paving, BALTIMORE, MD. City, Bureau Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids July 6. CD 6/29.

† **Central States Constr. & Equip. Co.**, 707 Collinsville Ave., East St. Louis, Ill. CA $665,155. passenger terminal bldg., pilot proficiency bldg., Dover Air Force Base, ENG-36-109-55-29, DOVER, DEL. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. Whiteside Foster Damon & Doane, Inc., Penna R.R. Bldg., Wilmington, Del., archt. CD 11/6/53.

† **Parini Constr. Co.**, Atco, N. J. CA $707,293. curbs, gutters, drainage for streets and parking areas, Dover Air Force Base, ENG-36-109-55-88, DOVER, DEL. U. S. Eng., 2635 Abbottsford Rd., Phila., Pa. CD 7/8, under LB.

BUILDINGS—LB & CA

▲ **S. S. Silberblatt, Inc.**, 25 W. 45 St., New York 19, N. Y. LB $12,672,400. foundation and superstructure standard face brick; $10,923,700. superstructure standard faced brick; $12,766,400. foundation and superstructure steel panel facing, for Linden HOUSES in area bounded by Stanley, Schenck, Cozine and Vermont Aves., Proj. NYC-23, BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids July 12, CD 6/16;

George F. Driscoll Co., 41 E. 42 St., New York 17, N. Y. and **Moccia Constr. Co.**, 41 E. 42 St., New York 17, N. Y. LB $1,878,000. foundations only (Brooklyn, N. Y.);
Corbetta Constr. Co., Inc., 220 E. 42 St., New York 17, N. Y. LB $10,950,000. steel panel facing superstructure (Brooklyn, N. Y.);
Heating Maintenance Corp., 220 E. 138 St., New York 51, N. Y. LB $1,283,700. heating and ventilating work (Brooklyn, N. Y.);
Spitzer Electric Co., 60 W. 18 St., New York 11, N. Y. LB $986,000. electrical work (Brooklyn, N. Y.);
Lipsky & Rosenthal, 155 Utica Ave., Brooklyn 13, N. Y. LB $1,297,997. plumbing work (Brooklyn, N. Y.).

▲ **Terminal Constr. Corp.**, State Hy. 17, Wood Ridge, N. J. CA $2,588,645. general contract Hudson County ADMINISTRATION BLDG., JERSEY CITY, N. J. Bd Freeholders Hudson Co., Court House, Newark Ave., Jersey City, N. J. CD 4/21, under LB.

Rockefeller Estate Homes, Inc., 315 4th St., Lakewood, N. J. Separate Contracts. $750,000. RESIDENTIAL DEVELOPMENT, N. Oakland St. etc. LAKEWOOD, N. J. Edwin Gerber, 11 Commerce St., Newark, N. J., archt.

▲ **Delcrest Building Co.**, 39 E. Main St., Moorestown, Pa. Separate Contracts. $2,000,000. RESIDENTIAL DEVELOPMENT, Chester Ave., RIVERTON, N. J. S. Zell Bender, 225 N. 6th St., Camden, N. J. archt.

Blueberry Hill Homes, c/o Harsen & Johns, archts., Summit St. and East Railroad Ave., Tenafly, N. J. Owner Builds. $650,000. 24 HOUSES on tract at Mackay Drive and Ivy Lane west of Knickerbocker Rd., TENAFLY, N. J.

J. C. Breyfogle, 74 E. Gay St., Columbus, O., CA $375,000. OFFICE BLDG., Brunswick Pike, TRENTON, N. J. Trentfogle Holding Co., Inc., 74 E. Gay St., Columbus, O., and Brunswick Pike and Lakewood Dr., Trenton, N. J. Milosevich & Trautwein, 3391 N. High St., Columbus, O., archts.

Woodbury Estates, Inc., 1017 Oak Lane Ave., Phila. Pa., Separate Contracts. $737,000. RESIDENTIAL DEVELOPMENT, Ford Estates, West Deptford Twp., WOODBURY, N. J. Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

Jefron Homes, Inc., 614 Foxcroft Rd., Elkins Park, Pa. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Cherydale Farms, BARREN HILL, PA. Theodore Brandow, 5940 Windsor Ave., Phila., Pa., archt.

T & T Constr. Co., 57 Serpentine Lane, Levittown, Pa. Separate Contracts $350,000. SUPERMARKET Falls Twp., FALLSINGTON, PA.

Warner Co., 219 N. Broad St., Phila., Pa. Separate Contracts. $100,000. SLAG PROCESSING PLANT, FALLSINGTON, PA. Richardson & Gordon, 1411 Walnut St., Phila., Pa., engrs. E. L. Shoemaker, c/o owner, ch. engr.

▲ **United Engineering & Foundry**, 948 Ft. Duquesne Blvd., Pittsburgh, Pa. CA Est. $13,500,000. Blooming MILL at Roemer Works, FARRELL, PA. Sharon Steel Corp., Sharon, Pa.

Sharpless Worrall, 220 S. Union St., Kennett Square, Pa. CA $100,000. Transportation TERMINAL, KENNETT SQUARE, PA. Herr Transportation Co., Kennett Square, Pa. James F. Pierce, Kennett Square, Pa., archt.

▲ **Conrad Gettler Homes, Inc.**, North Hills, Pa. Separate Contracts. $2,700,000. RESIDENTIAL DEVELOPMENT, Towamencin Twp., LANSDALE, PA.

† **W. Hartley Miller**, 132 S. Queen St., Martinsburg, W. Va. CA $750,576. LIQUID PROPELLANT STORAGE AREA. Schedule A, Letterkenny Ordnance Depot, DA-18-020-55-66, LETTERKENNY, PA. U. S. Eng., P. O. Box 1715, Baltimore 3, Md. CD 7/7, under LB.

Otto Signorette Co., Haddon Heights, N. J. CA $100,000. 1 story, 80x300 ft., steel WAREHOUSE, MORRISVILLE, PA. Pittsburgh Standard Conduit Co., Morrisville, Pa.

Horter Building Corp., Att. Simon Mustakoff, 711 S. Jumper St., Phila., Pa. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Mansfield Ave., PHILA., PA.

Max Chipin & Sons, 6301 Crittenden St., Phila., Pa. Separate Contracts. $575,000. RESIDENTIAL DEVELOPMENT, Covington St., PHILA., PA. Henry S. Berg, 1411 Walnut St., Phila., Pa., archts.

Penn Galvanizer Co., 2201 E. Tioga St., Phila., Pa. Separate Contracts. $100,000. 1 story, brick, steel INDUSTRIAL BLDG. addn., PHILA., PA. Elmer H. Greenberg, 1325 Walnut St., Phila., Pa., engr.

Frank H. Wilson, 125 Coulter Ave., Ardmore, Pa. LB $446,670, FIELD HOUSE and STADIUM, Lincoln High School, PHILA., PA. Bd. Educ., 21 and Winter Sts., Phila., Pa. Bids July 8. CD 6/24.

George Dool, Southampton, Pa. CA $350,000. RESIDENTIAL DEVELOPMENT, Valley Rd., SOUTHAMPTON, PA. John J. McIlhinney, Southampton, Pa.

† **U. S. Eng.**, First and Douglas Sts. N. W., Wash. 25, D. C., rejected bids June 28, Bldg. 375 addn., ENG-49-080-55-81-(72), CAMP DETRICK, MD. LB $553,670. Will re-advertise. CD 7/5, under LB.

Austin Co., 510 N. Dearborn St., Chicago, Ill. CA $700,000, WAREHOUSE and OFFICE, 6130 N. Capitol St. N. W., WASH., D. C. Upjohn Co., Kalamazoo, Mich. W. A. Loumos, 17 Elmwood Pl., Short Hills, N. J. archt. CD 3/18.

Associated Brokers & Adjusters, 301 W. 11 St., Wilmington, Del. Separate Contracts. $350,000. RESIDENTIAL DEVELOPMENT, Milford Meadows, NEWARK, DEL.

C. J. Dougherty & Sons, 600 Tatnall St., Wilmington, Del. CA $349,980. SCHOOL, Second and Pyle Sts., Bayard and Woodlawn Aves., WILMINGTON, DEL. St. Thomas Roman Catholic Church, 301 N. Bayard Blvd., Wilmington, Del. Bids July 8. CD 6/29.

Mann Constr. Co., 2213 Concord Ave., Wilmington, Del. Separate Contracts. $800,000. RESIDENTIAL DEVELOPMENT, Alden Rd., in Blue Rock Manor, WILMINGTON, DEL.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 27 Louisiana July 29 Kentucky, Tennessee
July 29 Virginia
STREETS AND ROADS
July 27 Louisiana July 29 Kentucky, Tennessee
July 29 Virginia

BUILDINGS—BA

La., New Orleans—STORE—BA 7/21—at office Weed, Russell & Johnson Assn., archts., 550 Brickel Ave., Miami, Fla., 2 story, 145,000 sq. ft. steel, masonry, store, Gentilley Woods Subdivision, for Sears Roebuck & Co., Baronne and Commons Sts., New Orleans, La.

BUILDINGS—SLC

N. C., Raleigh—LIBERAL ARTS—Meredith College, Carlysle Campbell, pres., Wilmont Park, soon lets contract liberal arts classroom bldg. H. Raymond Weeks, Inc., Durham, archt. Wm. M. Wallace, II, Durham, engr. CD 8/23/44.

HEAVY CONSTRUCTION—LB & CA

† Empire Gas Eng. Co., 7 Baltimore Pl. N.W., Atlanta, Ga., LB $174,720, aircraft refueling facilities, Homestead Air Force Base, ENG-08-123-55-014, HOMESTEAD, FLA. U. S. Eng., Box 4970, Jacksonville, Fla. CD 6/3.

Walter P. Villere Co., 4405 River Rd., New Orleans, La. LB $150,880. imprv. Bayou Chevreuil consisting of 1,600,000 cu. yd. channel excav., St. James, St. John the Baptist and Lafourche Parishes, CONVENT, LA. Parish Gravity Drainage Dist., Convent, La. Bids July 6. CD 7/1.

† Southern Industrial & Piping Co., 3018 Leeland Ave., Houston, Tex. CA $676,697. hydrant fueling sys. Lake Charles Air Force Base, Inv. 55-69, LAKE CHARLES, LA. U. S. Eng., Box 1229, Galveston, Tex. Bids June 28, awarded July 5. CD 7/7, under LB.

▲ KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort,

Foster & Creighton Co., American National Bank Bldg., Nashville, Tenn. CA $1,257,865. (3 bidders) c. conc. 0.417 mi. North-South Expressway, FI and FGI 519 (3) SP 56-798, Jefferson Co. CD 7/13, under LB.

Schimpeler Constr. Co., 4023 S. Brook St., Louisville, Ky. LB $369,276. water supply and sewerage facilities, elevated water tank at Lebanon Jct. and Shepherdsville service areas, Kentucky Turnpike Proj. No. 1, KENTUCKY. Commonwealth of Ky., Dpt. Hys., Frankfort, Ky. Bids July 7. CD 6/21.

KENTUCKY—Commonwealth of Ky., Dpt. Hys., Frankfort, rejected bids July 1. bit. surf. Class C-1 25.4 mi. various roads, Warren Co. CD 7/13, under LB.

† Collins & Hobbs Co., 4013 Tennessee Ave., Chattanooga, Tenn., CA $598,700, weather station, ENG-09-133-55-66, CHATTANOOGA, TENN. U. S. Eng., 200 E. St. Julian St., Savannah, Ga. Bids Apr. 12. CD 6/3, under LB.

BUILDINGS—LB & CA

Jones Bros. & Co., Wilson, N. C., LB $252,500. 60,000 sq. ft. mfg. PLANT, CLINTON, N. C. Clinton Development Corp., Clinton, N. C. Bids July 6. CD 6/22.

▲ Roy E. Good Constr. Co., Builders Bldg., Charlotte, N. C., CA $5,500,000 SHOPPING CENTER, ATLANTA, GA. Broadview Plaza, Inc., 167 Harris St. N. W., Atlanta, Ga. Henry H. Jordan, Inc., Healey Bldg., Atlanta, Ga., archt.

Mc Donough Constr. Co., 7 Baltimore Pl. N. W., Atlanta, Ga., CA Est. $600,000, 61,000 sq. ft. addn to Buick - Oldsmobile - Pontiac ASSEMBLY PLANT, ATLANTA, GA. General Motors Corp., General Motors Bldg., Detroit, Mich. Awarded 7/11.

Caldwell & McCann, Box 477, Baton Rouge, La. LB $551,388 (9 bidders) Proj. No. L-7 LSU, 2 story, brick, steel, 45,000 sq. ft. AGRICULTURE EXTENSION BLDG. for Louisiana State University, BATON ROUGE, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids July 5. CD 6/21.

▲ Wood Constr. Co., Box 225, Quitman, Miss. CA $1,466,000. 2 PATIENT BLDGS. at East Louisiana State Hospital, Colony 2, JACKSON, LA. State Bldg. Auth., State Capitol, Baton Rouge, La. Bids June 28, awarded July 7. CD 7/8, under LB.

J. C. McClendon, Box 21, Gulfport, Miss. LB $366,900. (3 bidders) Jefferson Davis High SCHOOL, JENNINGS, LA. Jefferson Davis Parish School Bd., Jennings, La. Bids July 7. CD 6/23.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
August 2 Wisconsin August 9 Ohio
STREETS AND ROADS
August 2 Wisconsin August 9 Ohio

Ind., Portland—BA 8/29—City, sewage treatment plant. Bevington, Taggart & Fowler, K of P Bldg., Indianapolis, engrs. CD 8/27.

Mich., Caro—BA 8/29—Village, Glen Montague, clk., sewage plant, treatment facilities, River Street Sect. Plans deposit $10, refundable. Ralph A. Main, 355 Henrietta St., Birmingham, engr. CD 9/18/44.

BUILDINGS—BA

Mich., Grand Blanc—TANK BLDG.—BA 7/26—Argonaut Realty Div. General Motors Corp., archt., 304 General Motors Bldg., Detroit, tank bldg. addn., for Fisher Body Div. General Motors Corp., General Motors Bldg., Detroit, Mich.

Mich., Pontiac—COMMISSION—BA 7/29—Oakland Co. Comn., 550 S. Telegraph Rd., road commission bldg., shop, garage equip. storage and offices, Pontiac Rd. Plans deposit $25, refundable, Leon V. Belknap, 550 S. Telegraph Rd., archt. CD 5/31.

Mich., Detroit—SCHOOL—BA 8/20—City, Bd. Educ., 1354 Broadway, Mettetal Elementary School addn., 19355 Edinboro St. Shreve, Walker & Assoc., 600 Woodward Ave., archts. CD 1/14.

Mich., Holland—PLANT—BA About 4/2/56—H. J. Heinz Co., 1026 Progress St., Pittsburgh, Pa., plant.

BUILDINGS—SLC

Ill., Chicago—FACTORY—International Chemical Corp., 3030 W. 51 St., soon lets contract, 1 story with 2 story office, 13,000 sq. ft. factory addn. $125,000. A. Epstein & Sons, 2011 Pershing Rd., archts.

HEAVY CONSTRUCTION—LB & CA

Penker Constr. Co., 1030 Summer St., Cincinnati, O. LB $587,000. sewage disposal plant, trunk lines, linking it to sanitary sewerage sys., SIDNEY, O. City, Sidney, O. A. G. Wyatt & Assoc., 209 S. High St., Columbus, O., engrs. CD 2/1.

▲ WISCONSIN—State Hy. Comn., State Office Bldg., Madison,
Wis.—Raemisch Constr. Co., Middleton, Wis., CA $520,770, grade, base, structure 2.638 mi. Contr. 3, Mt. Horeb-Verona Rd., U. S. Hys. 18 and 151, Proj. F 017-2 (12), Dane Co.;
Wis.—J. R. Griffith Co., Rte. 1, Box 655, Racine, Wis. CA $1,030,118, base, c. conc. 7.314 mi. Contr. 1, Waupaca-Fremont Rd., U. S. Hy. 10, Proj. F 019-3 (19), Waupaca Co. Bids June 21. CD 6/24, under LB.

† Mayfair Constr. Co., 5660 Kedzie St., Chicago, Ill. CA $788,265, Special AAA Facility and related work at Site No. M-2, No. 11-032-55-61, Milwaukee, WISCONSIN. U. S. Eng., 475 Merchandise Mart, Chicago, Ill. Bids June 29. CD 7/6, under LB.

▲† Klug & Smith Co., 4425 W. Mitchell St., Milwaukee, Wis., LB $1,066,969, est. $1,015,913, (3 bidders) misc. bldg. and related work, Town of Franklin, Milwaukee Co., ENG-11-032-55-64, WISCONSIN. U. S. Eng., 475 Merchandise Mart, Chicago, Ill. Bids July 8. CD 6/27.

BUILDINGS—LB & CA

Felix Pesa & Sons Co., 745 Andrews St., Youngstown, O. CA $401,000. general contract SCHOOL and CONVENT, GIRARD, O. St. Rose Catholic Church, Father Norman P. Kelley, Girard, O. CD 4/23/54.

▲ Frank Messer & Sons, Inc., 4621 Paddock St., Cincinnati, O. CA $1,085,700. general contract STUDENT CENTER, OXFORD, O. Miami University, Oxford, O. CD 7/11, under LB.

▲ Guide Lamp Div. of General Motors Corp., 1637 W. 25 St., Anderson, Ind. Separate Contracts. $1,000,000. erect two BUILDINGS, one of all glass constr. for sealed beam headlight lamps and one for plastics dpt., ANDERSON, IND.

Johnson Concrete Contg. Co., 301 E. Ridge St., Griffith, Ind., CA $800,000, 75 HOMES, DYER, IND. Baldwin Builders, Inc., 672 Calumet St., Hammond, Ind. Awarded July 7.

Johnson Concrete Contg. Co., 301 E. Ridge St., Griffith, Ind., CA $800,000, 75 HOMES, MUNSTER, IND. Baldwin Builders, Inc., 6721 Calumet St., Hammond, Ind. Awarded July 7.

▲ Kessler Homes, Inc., 2916 N. Harding Ave. Indianapolis, Ind. Owner Builds. $2,500,000. 175 HOMES, SHELBYVILLE, IND.

▲ Dr. R. W. Donovan, 4950 Marine Dr., Chicago, Ill. Separate Contracts. $1,100,000. 100 HOMES, near BARRINGTON, ILL. Martin Green, 730 W. Millburn St., Evanston, Ill., archt. Awarded July 5.

▲ Michael J. McDermott & Co., 30 N. LaSalle St., Chicago, Ill. CA Est. $17,000,000. CONVENTION HALL, AMPHITHEATER, WAREHOUSE, AUDITORIUM, CHICAGO, ILL. Wonder Building Corp., 30 N. LaSalle St., Chicago, Ill. Jay J. Seaver Engineers, 53 W. Jackson St., Chicago, Ill., engrs.

Gawley Constr. Co., 7643 S. Kedzie St., Chicago, Ill., LB $539,441, Rich Twp. HIGH SCHOOL addn., PARK FOREST, ILL. School Dist. No. 227, Westwood Dr. and Sauk Trail, Park Forest, Ill. CD 5/19.

▲ A. Bentley & Sons Co., 201 Belmont Ave., Toledo, O., CA Est. $12,000,000. expand facilities, incl. new grinding and polishing line for glass FACTORY, expansion power, steam and water facilities, addnl. bending furnace, new autoclave, addnl. glass storage area, OTTAWA, ILL. Libbey-Owens-Ford Glass Co., National Bank Bldg., Toledo, O.

† Champion, Inc., Iron Mountain, Mich., CA $554,629. addnl. facilities at Camp Williams, ENG-11-032-55-57, CAMP DOUGLAS, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill. Bids June 21. CD 6/29, under LB.

The Hoffman Co., 1519 N. Oneida St., Appleton, Wis., CA $635,500, general contract HIGH SCHOOL, WAUSAU, WIS. Newman Catholic High School, Wausau, Wis. Bids June 15. CD 6/29, under LB.

John C. Westphal Co., 12274 Coyle St., Detroit, Mich. CA $559,659, 2nd unit, George Washington Carver SCHOOL, 18701 Paul St., DETROIT, MICH. City, Bd. Educ., 1354 Broadway, Detroit, Mich. Bids June 23. CD 2/28.

Barnes Constr. Co., 1310 Wallen St. S.W., Grand Rapids, Mich. LB $554,000. general contract JUNIOR HIGH SCHOOL, Breton Rd. and Lake Drive, EAST GRAND RAPIDS, MICH. City, Louis F. Battle, clk., East Grand Rapids, Mich. Bids June 27. CD 6/7.

Christman Co., 408 Kalamazoo Bldg., Lansing, Mich. CA $576,270. MUSIC BLDG., Michigan State University, EAST LANSING, MICH. State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing, Mich. CD 7/8, under LB.

Barnes Constr. Co., 1310 Wallen St. S.W., Grand Rapids, Mich. CA $295,000. 1 story, 120x255 ft., steel, masonry FACTORY and OFFICE, Race St. at Fuller St., GRAND RAPIDS, MICH. Hexton Furniture Co., 1206 Century Ave. S.W., Grand Rapids, Mich.

Martin Dyke & Sons, Holland, Mich. LB $655,000. general contract 4 story HOSPITAL addn., alterations, HOLLAND, MICH. City, Holland, Mich. Bids June 23. CD 6/3.

▲ Herlihy Mid-Continent Co., Comstock, Mich. CA Est. $5,000,000. 4 story, 235x255 ft. general OFFICE, underground power control center, Parnell Rd., JACKSON, MICH. Consumers Power Co., Dan E. Kern, pres., 212 Michigan Ave. W., Jackson, Mich. Bids June 22. CD 6/8.

▲ Seyburn & Berry, 18267 James Couzens Hy., Detroit, Mich. Owner Builds. $2,100,000. Rosedale Meadows, 145 brick ranch HOUSES, Arizona and Merriman Rds., LIVONIA, MICH.

▲ Alstron Constr. Co., 1021 E. Airport Rd., Muskegon, Mich. CA Est. $1,500,000. HOSPITAL addn., MUSKEGON, MICH. Hackley Hospital, Bd. Trustees, Harold Thurston, pres., 101 E. Forest Ave., Muskegon, Mich. Bids June 28. CD 6/7.

▲ David Kay, 10051 Southfield St., Detroit, Mich. Owner Builds. $1,500,000. Haberkorn by the Lake Subdivision, 100 HOMES, Harvard Shore Rd. and Jefferson Ave., ST. CLAIR SHORES, MICH.

Sherwin Builders, Inc., 23545 Wohfeil St., Taylor Twp. (Wyandotte P.O.), Mich. CA Est. $540,000. 45 brick HOMES, Wick and Wohfeil Sts., TAYLOR, MICH.

Palmer Smith Co., 415 Brainard St., Detroit 1, Mich. CA $545,500. Elementary SCHOOL, Elizabeth St., TRENTON, MICH. Trenton School Dist. Bd. Educ., Trenton, Mich. Jahr-Anderson Assoc., Inc., 15011 Michigan Ave., Dearborn, Mich., archt.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS
BRIDGES
July 26 Iowa July 28 Missouri
STREETS AND ROADS
July 26 Iowa July 28 Kansas, Missouri

KANSAS—BA 7/29—Kansas Turnpike Auth., P.O. Box 681, Topeka,
Douglas Co.—c. conc. 8.07 mi., Proj. 8-30 and 31-P (1). Plans deposit $6.
Lyon Co.—b. conc. 13.8 mi. plus 5.27 mi. of crossroad surf. Proj. 6-20 and 21-P (1). Plans deposit $10.
b. conc. 7.11 mi. plus 1.15 mi. of crossroad surf. Proj. 6-22-P (1). Plans deposit $7.
Lyon, Waubaunsee and Osage Counties—b. conc. 9.55 mi. plus 2.54 of crossroad surf. Proj. 6-23-P (1). Plans deposit $7. CD 9/30.

▲† Tex., Kingsville—RUNWAY—BA 8/9—Bureau Yards & Docks, Dpt. Navy, Bldg. No. 1, Naval Station, Corpus Christi, 8,000 ft. parallel runway; 5 connecting taxiways; 47,000 sq. yd. c. conc. pavement; 187,000 sq. yd. flexible base b. conc. pavement, etc., storm sewers, disposal plant, NOY 86330. $1,000,000. Plans deposit $50.

BUILDINGS—BA

Tex., Fort Worth—HOSPITAL—BA 8/2—Osteopathic Hospital, c/o Dr. Phil Russell, pres., 3705 Camp Bowie Blvd., 2 story, brick, tile, concrete, steel hospital, 1000 Montgomery St. $700,000. Plans deposit $25. Extended date. Joseph R. Pelich, 1203 Commerce Standard Bldg., archt. CD 6/21.

Mo., Fulton—HOSPITAL—BA About 8/15—Callaway County Hospital, Fulton, brick, concrete hospital wing addn., $600,000, Hewitt & Royer, Barclay Bldg., 3619 Broadway, Kansas City, Mo., archts. CD 9/29.

HEAVY CONSTRUCTION—LB & CA

Paul Kemper, Minot, N. D., Delzer Constr. Co., Bismarck, N. D. and Tri-State Excavating Co., 1213 NP Ave., Fargo, N. D., CA $875,728, water line from city treatment plant to jet interceptor base, approx. 12 mi., MINOT, N. D. City, Minot, N. D. Bids June 21. CD 6/30, under LB.

† Pine Bluff Sand & Gravel Co., foot of Nebraska St., Pine Bluff, Ark., LB $448,849. est. $453,394 (7 bidders) repair pile dike and revetment between Rulo and Tarkio Bend, CIVENG-23-028-55-110, NEBRASKA. U. S. Eng., 601 Davidson Bldg., Kansas City, Mo. Bids July 6. CD 6/13.

† C. F. Bower Constr. Co., Nebraska City, Neb., LB $489,267, constr. and repair standard dikes and revetment, Missouri River, Upper Kansas-Lower Morgan Bends, near Brownville, Inv. 25-066-55-153, NEBRASKA. U. S. Eng., 1709 Jackson St., Omaha, Neb. Bids July 8. CD 6/28.

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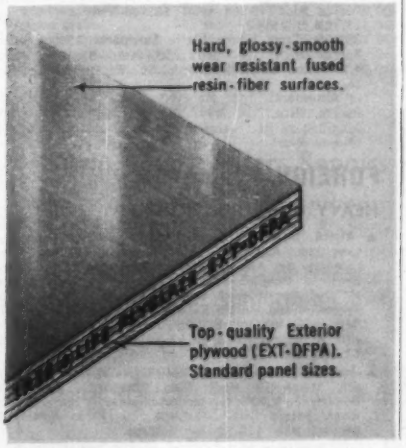
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KANSAS—Kansas Turnpike Auth., 2306 W. 10 St., Topeka,
Sherwood Contr. Co., Inc., 619 N. Santa Fe St., Wichita, Kan. LB $179,403. four structures, Proj. 1-40-B (1), Wyandotte Co. Bids July 8. CD 6/30.

▲ KANSAS—Kansas Turnpike Auth., P. O. Box 681, Topeka,
McCarthy Imprvt. Co. 602 Kahl Bldg., Davenport, Iowa. CA $1,521,190. b. conc. 9.2 mi., Butler and Chase Counties; CA $1,617,648. 8.1 mi. Chase Co. Bids July 1, awarded July 11. CD 7/8, under LB.

L. H. Lacy Co., 5630 Yale St., Dallas, Tex. LB $412,935, est. $600,000. apron repair, incl. breaking out existing 6 in. conc. and replacing with 14 in. FORT WORTH, TEX. Consolidated Vultee Aircraft Corp., Grants Lane, Fort Worth, Tex. Bids July 1. CD 6/16.

† **Lovering Constr. Co.**, 59 W. Kellogg Blvd., St. Paul, Minn. and O. J. Eickhof & Sons, Crookston, Minn. CA $607,142. operations bldg. control tower Glasgow Air Force Base, GLASGOW, MONT. U. S. Eng., Bldg. 2, City-County Airport, Walla Walla, Wash. CD 7/1, under LB.

COLORADO—State Hy. Dpt., 518 State Office Bldg., Denver,
Inland Constr. Co., Box 197, Cheyenne, Wyo., CA $554,745, est. $616,873, road mixed asphaltic surf. 8.444 mi. Uravan, Proj. No. A-AA-S 15 (1), Montrose Co. Bids July 6, awarded July 6. CD 6/29.

BUILDINGS—LB & CA

▲ **Paul Weaver & Co.**, 6th and Mynster Ave., Council Bluffs, Iowa. Owner Builds $1,500,000. housing, Bennett Ave. and Highway No. 6, COUNCIL BLUFFS, IOWA.

▲ **Merle-jung, Inc.**, 5555 W. Park Ave., St. Louis 10, Mo. CA Est. $1,000,000. 3 story, bsmnt., 85x180 ft. DOCTORS and DENTISTS BLDG., Francis Place, adjacent to northeast corner of Brentwood Blvd. and Clayton Rd. Intersection, on 65,000 sq. ft. site, 2-level parking GARAGE, CLAYTON (St. LOUIS 24 P. O.), MO. Medical West Building Corp., Richard J. Zeernig, pres., 425 Alta Dena Court, University City 5, Mo. Burton-Wirth & Co. & Assoc., 705 Chestnut St., St. Louis 1, Mo., archts. CD 5/17.

Quinlan Constr. Co., 2331 Indiana St., Kansas City, Mo. CA Est. $500,000. 2 story, bsmnt., 23,500 sq. ft. OFFICE, KANSAS CITY, MO. Seavey & Flarsheim Brokerage Co., 215 Pershing Rd., Kansas City, Mo. Kenneth Von Achen, 1200 W. 39 St., Kansas City, Mo., archt.

Stanton Constr. Co., 1012 Baltimore Ave., Kansas City, Mo. Owner Builds. $400,000. RECREATIONAL CENTER, NORTH KANSAS CITY, MO. Horner & Horner, 721 Minnesota St., Kansas City, Kan., archts.

Johnson Constr. Co., Salina, Kan., CA $848,689, general constr., 4 SCHOOLS, BEATRICE, NEB. Bd. Educ., Beatrice, Neb. Bids July 8. CD 6/14.

Alfred Grolhert, 3131 S. 40 St., Kansas City, Kan. Owner Builds. $600,000. HOUSING, North Kansas City, KANSAS CITY, KAN. Smith & Carlson, Mission, Kan., archts.

Rooks Corp., Abilene, Tex. Own Forces. $750,000. SHOPPING CENTER, ABILENE, TEX. CD 5/12.

▲ **M. W. Kellogg Co.**, M. Esperson Bldg., Houston, Tex. CA Approx. $2,150,000. constr. another reforming unit at existing REFINERY, BAYTOWN, TEX. Humble Oil & Refining Co., Humble Bldg., Houston, Tex. CD 2/10.

Yarbrough Constr. Co., Box 851, Austin, Tex., LB $775,575, est. $750,000. four 1 story, masonry WARD BLDGS., 100-beds each, for Kerrville State Home, KERRVILLE, TEX. Bd. for Texas State Hospitals & Special Schools, 4405 Lamar St., Austin, Tex. Bids July 7. CD 6/6.

Butler-Kimmel Co., 412 Avenue M, Lubbock, Tex., LB $531,640, County HOSPITAL, MONAHANS, TEX. Ward Co., Court House, Monahans, Tex. Bids July 7. CD 6/15.

FAR WEST

HEAVY CONSTRUCTION—LB & CA

STATE HIGHWAY LETTINGS
BRIDGES
August 4 California
STREETS AND ROADS
August 3 California

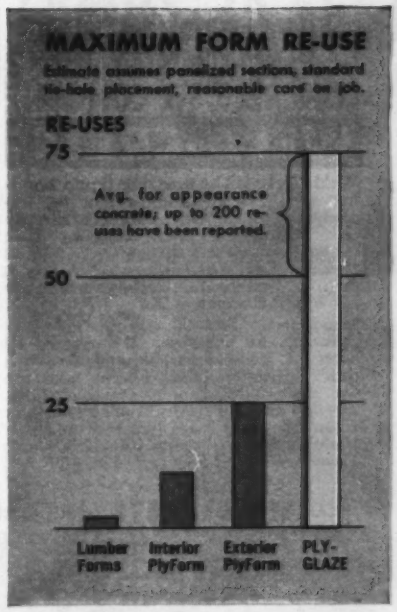
HEAVY CONSTRUCTION—LB & CA

IDAHO—State Hy. Dpt., Boise,
Quinn-Robbins, Inc., 703 S. 16 St., Boise, Idaho, CA $597,240, constr. roadway, bit. surf. tr. and 30.3 ft. concrete bridge on 20.28 mi. U. S. 95 Alt., Latah and Benewah Counties. Bids June 28, awarded July 1. CD 6/15.

ARIZONA—State Hy. Dpt., 17th Ave. and Jackson St., Phoenix,
Martin Constr. Co., Box 934, Tucson, Ariz., LB $546,930, select material, aggregate base bit. plant mix and 3 span overpass structure, 6 mi. Tucson-Benson Hy., Pima Co. CD 6/17.

ARIZONA—State Hy. Dpt., 17th Ave. and Jackson St., Phoenix,
W. J. Henson, Box 471, Prescott, Ariz., CA $219,397 select material, aggregate base, bit. surface treatment 10 mi. Prescott-Phoenix Highway, State Route 69, Maricopa Co. Awarded 7/9. CD 6/17.

Bonneville Constr. Co., Idaho Falls, Idaho, LB $140,000 (3 bidders) 70 mi. telephone line and phone installation, Lake Bay, WASHINGTON. Sound Telephone Co., Lake Bay, Wash.



On job after job, concrete form re-use records show...

BETTER "MILEAGE" with PLYGLAZE®

TAKE it from a firm that makes all three kinds of form materials:

Lumber forms are satisfactory (when neither re-use nor appearance count).

Plywood is much better. (Gives fair re-use, decent-looking concrete.)

PlyGlaze is best by far. (Gives most re-uses, very smoothest concrete.)

Use coupon below for information.

• ST. PAUL & TACOMA LUMBER CO.
Tacoma 2, Washington

St. Paul & Tacoma Lumber Co.
Dept. ENR, Tacoma 2, Wash.
Please send free PlyGlaze literature.

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Address.....

City.....Zone....State.....

EASY, PROVEN WAY to PERMANENTLY BOND CONCRETE TO CONCRETE

WELD-CRETE®

Weld-Crete is the amazing liquid bonding agent which enables you to *permanently* bond new concrete *directly* to old concrete . . . or to most any other structurally sound surface . . . *without need for costly, time-consuming chipping, drilling, roughening, acid washing or scarifying of concrete base.*

Weld-Crete has equal bonding permanence all climates, all surfaces, all sorts of conditions. When used with quick setting cement topping you can lay new floors, ramps, driveways, etc. one day and run heavy truck traffic over them the next. Get facts from your building materials supply dealer or write Larsen Products Corp., Box 5756-I, Bethesda, Md.

TYPICAL **WELD-CRETE** APPLICATION

National Brick Co., Terra Cotta, D. C.

Here Weld-Crete was used to bond new ¾" concrete topping directly to old, badly chipped and spalled floor slab which had been subjected to ceaseless heavy truck traffic. Plant shut-down time eliminated as Weld-Crete enabled National's own mechanics to do job over week end.

Maximum Joint Filling

WITH

Servicised

SELF-EXPANDING

CORK

- **Expands 50% Beyond Original Thickness After Compression**
- **Fully Compressible**
- **Non-extruding, Resilient**

Ideal for large concrete structure or masses where substantial initial contraction is anticipated before any considerable amount of expansion takes place. 50% expansion beyond original thickness after compression keeps joint space filled, regardless of concrete movement. Made in ½" to 1" thicknesses; widths to 36" and lengths to 10 ft.

Write for Catalog and Complete details on Servicised Joint Fillers and Sealers.

SERVICISED PRODUCTS CORP.
6051 W 65TH ST • CHICAGO 38, ILL.

▲† **M. M. Sundt Constr. Co.**, 440 S. Park Ave., Tucson, Ariz., CA **$1,362,974.** est. $1,000,000. airmen's dormitories, Yuma County Airport, ENG-04-353-55-174, YUMA, ARIZ. U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids June 28.

† **J. P. Hopkins Co.**, Mercer Island, Wash., CA **$728,496.** guided missile installation, Inv. 55-235, at Poulsbo, WASHINGTON. U. S. Eng., 4735 E. Marginal Way, Seattle 4, Wash. Bids June 16. CD 6/27, under LB.

† **D. M. Drake Co.**, 1600 N.W. Savier St., Portland, Ore., CA **$414,622,** readiness crew, cold storage and recreation bldgs., Air Force Base, Spec. 44463, KLAMATH FALLS, ORE. P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids June 15. CD 6/21, under LB.

† **D. M. Drake Co.**, 1600 N.W. Savier St., Portland, Ore., CA **$628,521,** 1 and 2 story, 26x303 ft. hangar; 1 story 37x54 ft. flight simulator unit; 49x169 ft., 15x38 ft., 38x38 ft. rein.-con. ready rocket bldg.; three 2640 ft. rein.-con. storage igloos, Air Force Base, Spec. 44455, KLAMATH FALLS, ORE. P. Wks. Officer, 13th Naval Dist., 1611 W. Wheeler St., Seattle, Wash. Bids June 21. CD 6/27, under LB.

▲ **CALIFORNIA**—State Dpt. P. Wks., 1120 N St., Sacramento,

Grove, Shepherd, Wilson & Kruge, Inc., 120 6th St. N., Seattle, Wash., LB **$5,878,249,** addnl. units East Shore Freeway Proj., incl. double deck rein.-con. box girder bridge with 52 ft. roadway, connections paved with c. conc. and ramps, frontage roads, city streets, plant mix. surf., Oakland, Alameda Co. Bids July 13. CD 6/9.

▲ **CALIFORNIA**—State Div. Hys., 1120 N St., Sacramento,

Guy F. Atkinson Co., 22233 S. Santa Fe St., Long Beach, Calif., CA **$4,087,411,** constr. two 58 ft. roadbeds separated by 16 ft. median to provide 8-lane divided hy. on Harbor Freeway, approx. 1.8 mi. between 92nd St. and Gage Ave., Los Angeles Co. Bids June 16. CD 5/13.

† **Diversified Builders, Inc.**, Box 390, Montebello, Calif. CA **$955,000.** rehabilitation various buildings, Marine Corp Station, Spec. 47980, MOJAVE, CALIF., Dpt. Navy, San Diego, Calif. Bids June 28.

† **M. H. Golden Constr. Co.**, 3485 Noell St., San Diego, Calif., CA **$684,500,** extend Bldg. 379, Naval Air Station, North Island, NOY 86708, Spec. 45819, SAN DIEGO, CALIF. 11th Naval Dist., Dpt. Navy, San Diego, Calif. Bids June 22, awarded June 29. CD 7/1, under LB.

BUILDINGS—LB & CA

▲ **Bushboom & Rauh**, N 601 Cedar St., Spokane, Wash. CA **$1,105,451,** general constr. SERVICE CENTER and first floor of 5 story OFFICE BLDG., SPOKANE, WASH. Grand total $1,838,863. Washington Water Power Co., W. 825 Trent St., Spokane, Wash. Bids June 24. CD 6/15.

Warren, Little & Lund and J. Smythe Plumbing & Heating Co., N. 226 Division St., Spokane, Wash., CA **$552,210,** mechanical (Spokane, Wash.),

Power City Electric Co., N 920 Howard St., Spokane, Wash. CA **$181,202,** wiring (Spokane, Wash.).

Anderson Constr. Co., 115 S. 9th St., Tacoma, Wash. LB **$585,000.** BUILDING alterations at Salishan Housing Proj., TACOMA, WASH. Tacoma Housing Auth., 132 Longview St., Tacoma, Wash. A. G. Lumm, Rust Bldg., Tacoma, Wash., archt. Bids July 7.

▲ **Combustion Engineering, Inc.**, 510 W. 6 St., Los Angeles, Calif., LB **$2,872,355,** two boiler units at Scattergood POWER PLANT, LOS ANGELES, CALIF. Los Angeles Dpt. Water & Power, 311 S. Spring St., Los Angeles, Calif. Bids July 5. CD 6/22.

Marinwood Builders, 2204 McDonald Ave., Richmond, Calif. Owner Builds. **$484,000.** 44 HOMES, MARINWOOD, CALIF.

▲ **Oddstad Homes**, c/o A. F. Oddstad, Jr., 69 Catalpa Dr., Atherton, Calif. Own Forces. **$2,100,000.** Farm Hill HOMES Development, REDWOOD CITY, CALIF.

▲ **Stolte, Inc.**, 8451 San Leandro St., Oakland 21, Calif., LB **$1,634,221,** 6 story wing to County JAIL, SACRAMENTO, CALIF. Sacramento Co., 7 and Eye Sts., Sacramento, Calif. Bids July 13. CD 6/14.

Cowal Constr. Co., 813 J St., Sacramento, Calif. Owner Builds. **$518,000.** 70 HOMES, SACRAMENTO, CALIF.

▲ **M. W. Kellogg Co.**, 225 Broadway, New York, N. Y. CA, 100 ton per day urea PLANT, VENTURA, CALIF. Shell Chemical Corp., 50 W. 50 St., New York, N. Y.

Dinwiddie Constr. Co., 620 Market St., San Francisco, Calif., CA **$350,000,** STORE, WALNUT CREEK, CALIF. MacDonald Co., 1 Montgomery St., San Francisco, Calif. Robert Tiles, 709 Mission St., San Francisco, Calif., archt.

CANADA

BUILDINGS—BA

B. C., **New Westminster**—PUBLIC BLDG.—BA 8/3—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., public bldg. addn. $750,000. A. E. Gardner, c/o owner, archt.

HEAVY CONSTRUCTION—LB & CA

Foundation Co. of Canada, 1220 Bay St., Toronto, Ont., LB **$702,445** (4 bidders) eastern approach to Humber River bridge on Queen St., part of Lakeshore Expressway Development, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids July 8. CD 6/22.

▲ **McNamara Constr. Co. Ltd.**, 42 Industrial St., Toronto, Ont., LB **$1,747,365,** Queen St. W. exten. from Roncesvalles Ave. to Riverside Dr. part of Lakeshore Expressway development, TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. CD 11/30.

Canamont Constr. Ltd., 680 Sherbrooke St. W., Montreal, Que., LB **$486,720** (3 bidders) excavation and foundation for terminal bldg. at Montreal-Dorval Airport, DORVAL, QUE. Dpt. Transport, Hunter Bldg., Ottawa, Ont. Bids July 4. CD 6/20.

▲ **E. G. M. Cape & Co.**, 620 Cathcart St., Montreal, Que. LB **$1,803,660,** wharf exten. to Sects. 50 to 53. Monteral Harbor, MONTREAL, QUE. Natl. Harbors Bd., Parliament Bldgs., Ottawa, Ont. Bids July 7. CD 6/23.

Dominion Bridge Co. Ltd., Lachine, Que., CA **$641,350.** widen roadway on downstream side of Jacques Cartier Bridge, MONTREAL, QUE. National Harbors Bd., Parliament Bldgs. Ottawa, Ont. Awarded July 8. CD 6/8 under LB.

BUILDINGS—LB & CA

▲ **Koppers Co., Inc.**, Koppers Bldg., Pittsburgh, Pa., U. S. A., CA Est. **$3,000,000.** constr. battery of 25 Koppers-Becker type COKE OVENS and auxiliary equip., HAMILTON, ONT. Dominion Foundries & Steel Ltd., Depew St., Hamilton, Ont. CD 6/22.

Norsemen Apartments, Ltd., 3244 Bloor St. W., Toronto, Ont. Owner Builds. **$475,000.** 6 story, 60 suite, 54x205 ft. steel, brick APARTMENT, TORONTO, Ont. Irving Boignon, 321 Davenport Rd., Toronto, Ont., archt.

Leland Apartments, Ltd., 3244 Bloor St. W., Toronto, Ont. Owner Builds. **$475,000,** 60-suite, 6-story, 54x205 ft., steel APARTMENT, TORONTO, ONT. Irving Boignon, 321 Davenport Rd., Toronto, Ont., archt.

▲ **R. Theoret & F. Philippe**, 331 Notre Dame St., Gatineau, Que. Owner Builds. **$1,000,000.** 100-unit HOUSING, near Hull-Masson Rd., GATINEAU, QUE. CD 7/13.

▲ **A. N. Ball Cie, Ltd.**, 1440 St. Catherine St. W., Montreal, Que., CA **$826,957,** outside services, electrical and steam distr. sys.; CA **$204,000.** SERVICE BLDG. for Military College, ST. JOHN'S, QUE. Defence Constr. Ltd., 56 Lyon St., Ottawa, Ont. Bids June 9. CD 5/19.

ALASKA

HEAVY CONSTRUCTION—LB & CA

▲† **ALASKA**—Alaska Road Comn., Dpt. Interior, Federal Bldg., Juneau,

Rogers Constr. Co. and **Babler Bros.**, Anchorage, Alaska CA **$1,013,709,** est. $1,244,575, regrading, bit. surf. 25 mi. Sterling Hy. on Kenai peninsula, Sect. B1, E. Bids June 14. CD 6/17, under LB.

† **Baker & Ford**, Bellingham, Wash., CA **$531,004,** est. $426,890 (4 bidders) fourteen 81-ft. rein.-con. ammo storage igloos, Elmendorf Air Force Base, Inv. 55-90, ALASKA. U. S. Eng., Anchorage, Alaska. Bids July 7.

† **Macri-Montgomery**, Anchorage, Alaska, CA **$550,136,** 29,503 ft. 6- to 12-in water mains, Proj. Aaa 50-A-198, ANCHORAGE, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau, Alaska. Bids May 18. CD 5/26, under LB.

BUILDINGS—LB & CA

C. C. Moore & Co., Smith Tower, Seattle, Wash., LB **$522,584** (3 bidders) STEAM GENERATING UNIT for exten. Knik Arm Power Plant, ANCHORAGE, ALASKA. Chugach Electric Assn., Inc., Anchorage, Alaska. G. T. Wieland, Arcade Bldg., Seattle, Wash., engr. CD 11/30..

PUERTO RICO

HEAVY CONSTRUCTION—LB & CA

▲ **Rexach & Rivera Constr. Co., Inc.**, Box 7235 Bo. Obrero Sta., Santurce, P. R., CA **$978,616,** est. $1,173,305, constr. 5.588 Kms. Proj. F-3-2 (6) Mameyes-Luquillo Rd. No. 3, Luquillo, PUERTO RICO. P. Wks. Dpt., Puerto Rico. Grand total $2,703,594, awarded June 13. CD 8/25/52;

Antonio Carro Rivera, Calle San Jorge 259, Santurce, Puerto Rico, CA **$777,253,** est. 855,114, const. 4.774 Km. Luquillo-Fajardo St. Rd. 3 awarded June 16. (Puerto Rico);

L. Antonsanti, Inc., Agueybana 422, Altos Hato Rey, Puerto Rico, CA **$947,725,** est. $1,072,270, San Juan-Caguas Rd. Intersection No. 5, awarded June 17. (Puerto Rico).

FOREIGN

HEAVY CONSTRUCTION—BA

▲ **Africa, Belgian Congo**—Govt. of Belgian Congo, will take bids August 10 simultaneously at the Agence Coloniale des Approvisionnements, 1 rue de la Regence, Brussels, Belgian and at Council of Public Tenders, of the Government General, Admin. Bldg., Pierre Rychmans and Martin Rutton Aves., Leopoldville-Kalina, Belgian Congo for Bukavu-Kahuzi section of Stanleyville Hy., Spec. folio 23-62-55 for sale at $280. Est. $3,300,000.

▲ **India, Bombay**—BA 11/30—Koyna Hydroelectric Project, Mercantile Bank Bldg., Mahatma Gandhi Rd., Bombay 1, 2,200 ft. concrete, masonry dam in Koyne River, Satara Dist. $14,450,520. Plans deposit $21 per set plus $10.50 for postage.

(Proposed Advertisements se pp. 173 to 176)

UNIT PRICES

Canal Zone Building Bids

A chapel at Fort Kobbe and a headquarters building at Quarry Heights, near Panama, drew only two bids but a low of $404,810 including utilities, driveways and parking areas. This was 14% below the engineer's estimate and 20% below the second bidder. Corps of Engineers, Jacksonville District, Florida is the engineer. Framorco, Inc., Ancon, C. Z., placed the low bid. The lump sum bids, on the chapel produced unit prices of $12.87/sq ft and $19.85, on the headquarters building $8.73/sq ft and $9.70.

The chapel will accommodate 300. It is a one-story structure of reinforced concrete slab on fill, with exterior walls of either stucco-finished masonry or screened pierced clay tile, and built-up roof of rigid insulation on poured-in-place deck.

The headquarters building will be two stories with basement, reinforced concrete with structural clay tile and stucco finish. It will be mechanically ventilated, with aluminum jalousies.

1	Framorco, Inc., Ancon, Panama, Canal Zone	$404,810*
2	Isthmian Contructors, Inc., Balboa, C.Z.	506,000
EE	Corps of Engineers, Jacksonville, Fla.	471,827

Completion: 300 calendar days, liq. damages... $175/day

Bids: 6-7-55 Items	Unit	Quantity	Unit Prices 1	2
Clear & grup	ac	4	$690.00	$130.00
Excavation, unclass	cy	6,000	1.90	1.40
Chapel	ls	.....	133,837	203,597
Headquarters bldg	ls	.....	218,375	242,418
Concrete walks	sf	6,000	0.46	0.45
steps	sf	84	1.00	2.20
Water lines, hdqts bldg	ls	.....	1,200	957.00
chapel	ls	.....	570.00	993.00
San gravity sewer, hdqts.	ls	.....	2,159	2,596
chapel	ls	.....	780.00	979.00
Wir bound mac base crse	sy	802	3.43	2.20
Subbase, 4" rock driveway, Ft Kobbe	sy	940	1.60	1.10
parking area, Ft Kobbe	sy	1,080	1.60	1.10
Bituminous prime coat	gal	240	0.80	0.25
tack coat	gal	80	0.80	0.25
Bit conc, surf crse mix	t	70	18.00	22.00
bit material	gal	1,050	0.35	0.25
Conc pvmt 9"-6"-9" driveway, Ft Kobbe	sy	940	5.93	8.50
parking area, Ft Kobbe	sy	1,080	5.93	8.50
Storm sewers 8"	lf	95	4.65	10.00
12"	lf	389	5.25	8.00
Reinf conc inlets	ea	3	170.00	420.00
manholes	ea	4	200.00	420.00
Curb & gutters, driveway	lf	755	2.35	5.00
parking area	lf	540	2.35	5.00
Panama drains	lf	545	1.65	1.50
Rem exist drain structs.	ls	.....	75.00	273.00
Re-lay exist storm sewer	ls	.....	780.00	1,470
Sprigging	sy	14,310	0.18	0.26

* Contract signed for $393,959 on June 14, 1955, with elimination of parking area for the chapel.

Hoboken, N. J. Pier Repairs

The Port of N. Y. Authority awarded to Allen N. Spooner & Son, Inc., at $929,929, the repair of Hoboken, N. J. pier 3 substructure. John M. Kyle is the Authority's Chief Engineer.

The work covers widening the 949-ft pier aprons 6 ft on each side and repairing the substructure and lower deck. Wage rates for dock builders are $3.50 per hr.

Bidders include:

1 Allen N. Spooner & Son, Inc., New York, N. Y.	$929,929*
2 J. Rich Steers, Inc New York, N Y.	993,770*
3 George W Rogers Const. Co., New York, N. Y.	1,199,804*

Schedule: 6-1-55 to 9-29-56, liquidated damages $500/calendar day

Bids: 4-19-55 Items	Unit	Quantity	Unit Prices 1 C	2
Load carrying p les	lf	21,400	1.75	2.50
Timb pile caps, stringr decks, rem, repl	Mfbm	10	600.00	500.00
Timber lagging	lf	3,600	3.85	5.25
Load tests	ea	2	5,000	3,000
Dredging	cy	125,000	0.96	0.90
Concrete wearing surface remove P replace	cf	3,500	4.00	1.75
Other work, lump sum	ls	.....	728,619	790,845

* Estimated contract price. † Extra work

Delaware Bridges and Road

The Delaware State Highway Department let two creosoted timber bridges and approaches in Kent County to Burger Building Corp. for $38,359.

1C Burger Building Corp., Dover, Del	$38,359
2 Pleasanton & Edgell, Inc., Dover, Del	40,002
5 Standard Bitulithic Co., Newark, N. J.	44,097

Completion date: 10-1-55.

Bids: 5-25-55 Items	Unit	Quantity	Unit Prices 1 C	2
Clear & grub	ls	.....	$1,600	$1,470
Excavation	cy	5,700	0.65	0.53
structures	cy	70	4.00	1.90
Borrow	cy	7,000	0.75	0.95
pit stripping	cy	100	0.01	0.40
selected	cy	3,000	1.50	1.58
Timber structures	Mfbm	18	400.00	360.00
RCP, 12"	lf	120	3.00	2.70
15"	lf	120	4.00	2.70
CMP, 6" perf	lf	100	2.00	1.00
Timber piles, treated	lf	1,800	2.65	3.30
test piles	lf	100	4.50	4.80
sheet piles	Mfbm	7	265.00	280.00
Wood shoulder curb	lf	800	0.50	0.57
CM downspouts, 8"	lf	150	1.75	2.00
Wire rope guard fence	lf	1,300	2.20	2.25
End post attachments	ea	20	43.00	45.00
Seeding	ac	05	600.00	470.00
Mulching	sy	2,400	0.12	0.11
Riprap	sy	50	7.75	8.00
Rem existing structures	ls	.....	800.00	900.00
Muck excavation	ls	.....	1,100	1,860
Traffic maintenance	ls	.....	450.00	100.00

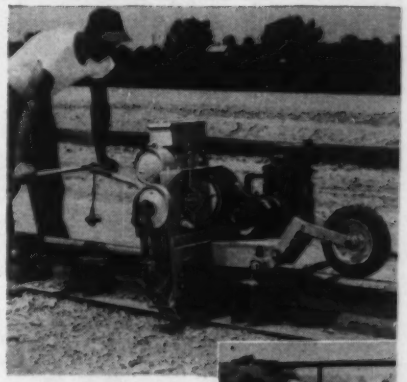
George & Lynch, Wilmington, bid 12% below the nearest competitor on 1.646 mi of 20-ft bituminous-surfaced road in Sussex County, Del.

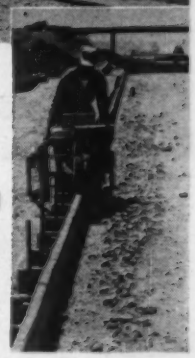
1C George & Lynch, Inc., Wilmington, Del.	$37,828
2 Standard Bitulithic Co., Newark, N. J.	42,304
4 Pleasanton & Edgell, Inc., Dover, Del.	47,000

Completion date: 9-15-55.

Bids: 5-25-55 Items	Unit	Quantity	Unit Prices 1 C	2
Clear & grub	ls	.....	$2,000	$3,200
Excavation	cy	200	1.00	1.50
Borrow	cy	8,000	0.25	0.70
pit stripping	cy	100	0.01	0.25
selected	cy	6,500	1.15	1.10
Asphalt, R.C.gr. 1	gal	10,900	0.125	0.13
R.C.gr 3	gal	11,000	0.13	0.13
Slag chips	t	450	5.70	5.70
Crushed chips	t	450	5.70	5.70
RCP, 12"	lf	832	2.50	2.25
15"	lf	198	3.50	2.75
24"	lf	90	5.00	5.50
36"	lf	55	10.00	11.00
48"	lf	240	16.00	16.00
CMP, 8"	lf	100	1.50	2.00
6" perf	lf	100	1.50	2.00
Shoulder curb, wood	lf	1,150	0.50	0.50
Wire rope guard fence	lf	1,150	2.30	2.10
End post attachments	ea	12	50.00	40.00
Seeding	ac	1	500.00	300.00
Mulching	sy	4,800	0.10	0.10
Grading, roadway	mi	1.648	2,100	2,200
Ditching	lf	580	1.00	1.80
Sacked sand cmt riprap	cy	40	25.00	30.00
Rem existing structures	ls	.....	500.00	374.00

TAMPS 25 FEET PER MINUTE!





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THE CLEVELAND FORMGRADER COMPANY

Mills Road, Avon, Ohio

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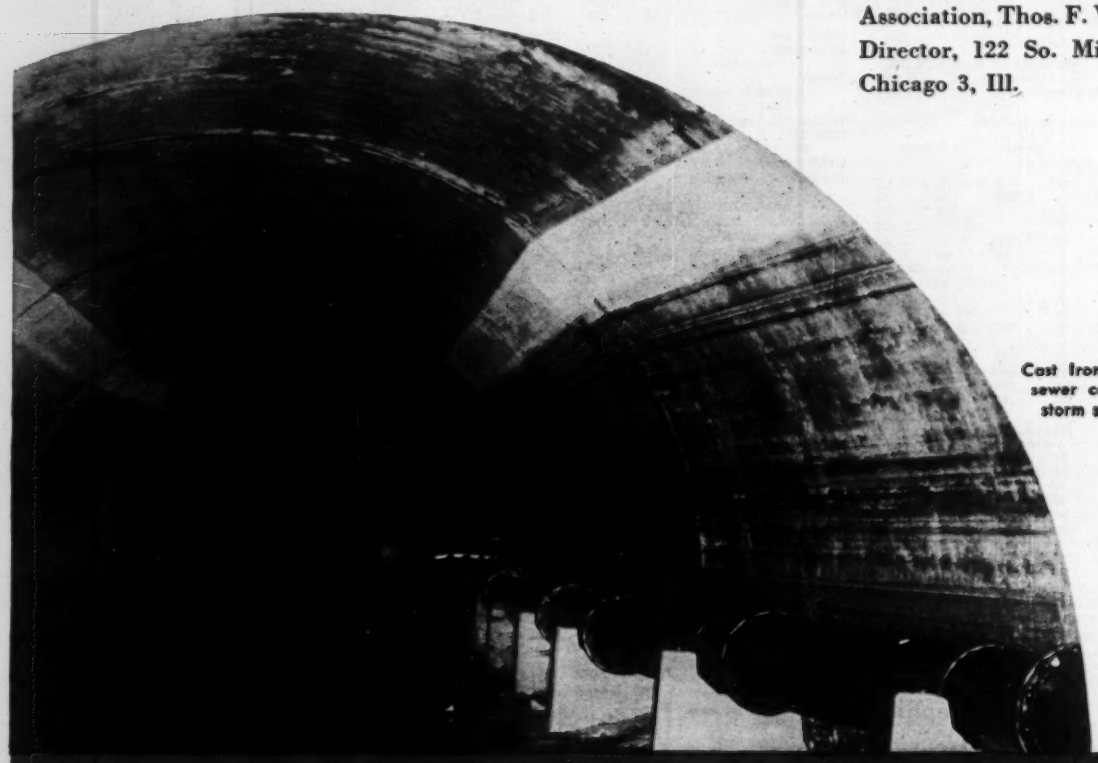
Industrial waste and other piping for large manufacturer in suburban Chicago, Ill.

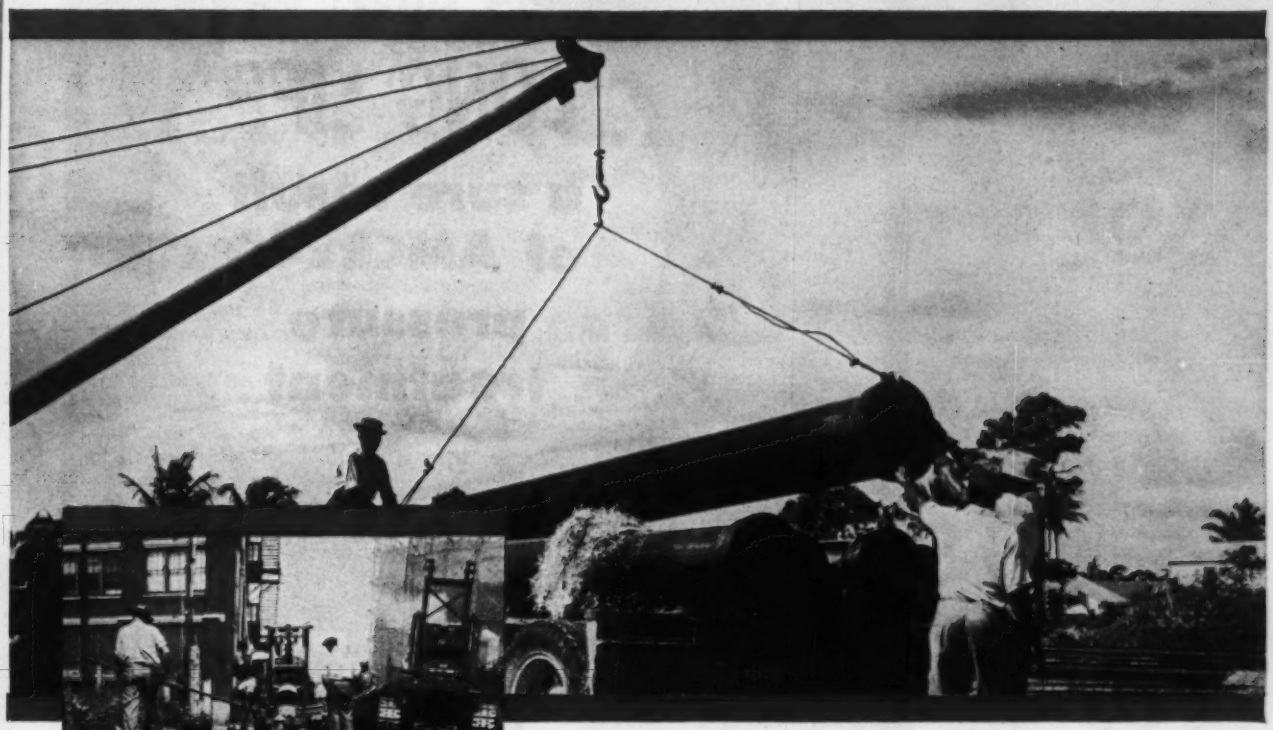
Cast iron pipe has been famed for centuries as a rugged material with proved ability to withstand beam, compressive and shock stresses. Today's *modernized* cast iron pipe—centrifugally cast—is even tougher, even stronger and more uniform in quality. Its effective resistance to corrosion, plus high strength factors, ensure long life, underground or underwater. When an engineer needs a tough pipe for tough requirements, his first and last thought are usually: *specify cast iron pipe.* For information write Cast Iron Pipe Research Association, Thos. F. Wolfe, Managing Director, 122 So. Michigan Avenue, Chicago 3, Ill.



Cast Iron Pipe relief sanitary sewer constructed in existing storm sewer: Tulsa, Okla.

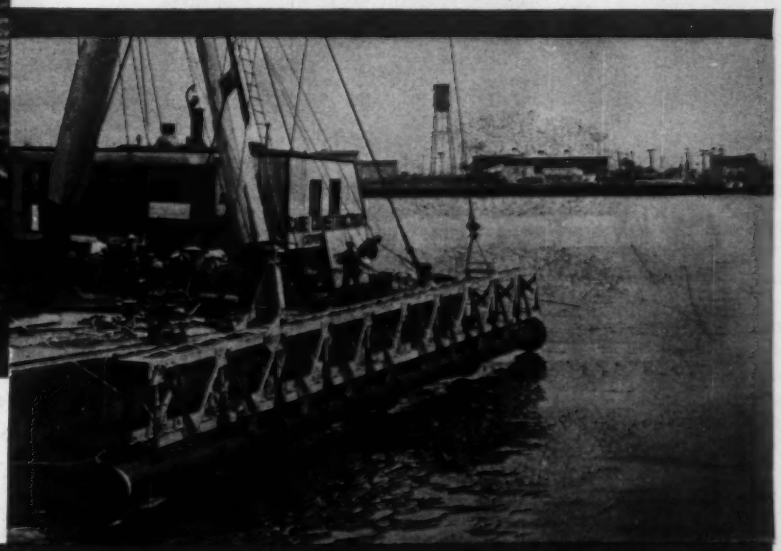
CAST IRON PIPE

TOUGH requirements



Unloading 16" Cast Iron Pipe for water supply system at Ft. Lauderdale, Fla.

Installing Cast Iron gas main in Chicago's North Side.



Cast Iron ball-and-socket joint water supply line being installed in channel bottom between Terminal Island and outer Los Angeles harbor.

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Lowry Process
Creosoted Products

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PLANK
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You can reduce maintenance costs and build extra years of service into your lines by installing Amcreco pressure treated poles. Amcreco pressure treatment with creosote oil preserves the natural strength of the wood—armors the pole against insects and fungi—assures greater strength and dependability throughout the life of the pole.

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Thruway Issue Postponed Till Money Market Improves

Dissatisfied with interest rate, state comptroller rejects bid. Outlook darkens a little for other turnpike issues

The New York State Thruway Authority's plan to raise another $125 million now in state-guaranteed long-term bonds ran smack into the tightening money market last week. After getting a single bid for the bonds which would have cost the Authority about 2.79%, State Comptroller Arthur Levitt rejected it as charging too high a rate. He decided to wait until the municipal bond market improved.

Levitt's decision was not unexpected in Wall Street, where some bond men had predicted he would throw out any bid in this range. But the general opinion among financial men is that Levitt will have to wait some time to get a better interest rate. They expect the bond market will continue to get tighter as the year goes on. The $125-million Thruway issue was scheduled to mature from 1985 to 1995, with an average maturity of 35¾ years.

• **Funds through September**—The Authority will have to take some action to raise new money before long. According to a spokesman, it has enough funds in hand to continue construction through September. If the bond market continues to harden, it will probably borrow short-term money from banks until the bond market improves. By the terms of its bond indenture, the remaining $250-million state-guaranteed bonds it is authorized to sell must be in maturities from 1984 to 1996.

So far, the Thruway has borrowed $600 million—$350 million in revenue bonds, and $250 million in state-guaranteed bonds. Another $250 million in guaranteed bonds is authorized. The revenue bonds have a prior call on revenues from the Thruway. No more revenue bonds can be sold until July 1, 1956.

• **Billion-dollar job**—The entire Thruway—with its "main line" from Buffalo to New York and five spurs—is expected to cost a little more than $1 billion by the time the spurs are finished in 1957. But the Authority hopes to apply about $71 million of earnings during 1954-1957 to the project. That means it will sell only $931 million in bonds, if all goes well.

The "main line" should reach Yonkers by the end of this year, and end at the New York City line by mid-1956. The five branches are scheduled for completion by the following year. Other extensions will be built if feasible.

• **What about Illinois?**—The present state of the municipal market makes it doubtful whether the $400-million Illinois toll road issue could be financed soon, even if it could be made ready for the market by next month, as its sponsors hope. From the looks of things, the Illinois Toll Road Commission would have to pay a stiff interest cost at that time.

Another $100 million of Connecticut Expressway bonds is scheduled to reach the market in August or September. And the $68-million Richmond-Petersburg Turnpike is scheduled for September or October. Other toll-road projects that looked possible earlier in the year for 1955 financing are: (1) The $100-million South Louisiana Turnpike; (2) a $227-million Washington toll-road issue; (3) a $194-million North-South Michigan Turnpike.

• **No option**—Such completely "unseasoned" projects do not have the happy option that the New York Thruway has of borrowing short-term money from banks if the long-term market does not please it. It seems very unlikely that any group of banks would ever make huge loans to turnpike projects that were not already in operation and proving out on their earnings estimates.

A-Plants Will Bring New Problems

The construction industry will be severely tested as development of atomic reactors picks up speed, according to Frederick H. Warren, former Atomic Energy Commission official in charge of construction and supply.

Writing in this month's issue of The Constructor, AGC publication, Warren pointed out that this test will come when A-plants develop to the point when they must be built at costs competitive with each other. The industry will have to combine its "ingenuity and practical experience" with improved and simplified construction methods to meet the basic needs of safe and durable construction.

Warren, who is now an executive of General Dynamics Corp., urged the industry to prepare itself. He suggested that it discuss with AEC the possibilities of setting up standards of practice in design and construction of A-plants. Pointing out that faulty design and construction could produce great hazards, Warren noted that AEC, with its preponderance of technical know-how, will have a very direct hand in building A-plants for some time to come.

Unless standards are worked out, Warren warned, construction might be hampered by arbitrary rules imposed by fearful state and local authorities. Among the technical problems, he listed stability of foundations, control of shielding concrete, super-clean systems, and rigid leak-testing standards.

Enough Gypsum For Years New Quarry Can Provide It

National Gypsum Co., of Buffalo, last week announced that its newly developed gypsum deposit near Halifax, Nova Scotia, has reserves of at least 200,000,000 tons. This gypsum is just becoming available.

Right now, about 10,000,000 tons of gypsum rock are processed each year by U. S. companies to make wallboard, lath, plaster, and sheating. And there is a shortage. National is now building processing plants near Philadelphia and New Orleans, and is expanding other seaboard capacity to handle the Nova Scotia output.

Since construction started at the quarry site two years ago, $6 million has been spent in moving more than 2,000,000 tons of earth and rock, laying over 5 mi of railroad, constructing buildings and roads, setting up crushers at the quarry site and building loading facilities 31 mi away across the bay from Halifax.

(*B&F continued on page 167*)

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THE LONGER LOOK:

MAPI's dynamic equipment formula: Can it reduce costs of construction by rationalizing equipment buying policies?

Deciding when to replace old equipment to gain the greatest savings is a problem the construction industry has in common with almost every other industry that uses durable equipment. Holding off replacement too long can stick you with rising operating and maintenance costs. Replacing too soon can mean higher capital costs than savings on operating costs will justify. Closely related is the question of whether to lease or buy.

In the last five years a number of leading manufacturing corporations have adopted, as a scientific approach to equipment analysis, the formula developed by the Machinery and Allied Products Institute. The formula is merely a systematic effort to enable comparison of all operating, capital cost, and revenue advantages of present equipment with the advantages of its best current alternative, then indicate whether replacement should be made now.

Last week MAPI held its first summer seminar at Beloit College, a small liberal arts institution in southern Wisconsin located near machine tool makers in Rockford, Ill., and machinery manufacturers in the Milwaukee and Chicago areas. Representatives came from over 30 leading capital-equipment producers, including makers of construction equipment such as Allis-Chalmers, Caterpillar Tractor, International Harvester and Koering Company.

The purpose of the seminar was to provide an intensive course in equipment analysis for plant men and also to permit exchange of practical experience among companies that have used or studied the MAPI method. MAPI's research director, George Terborgh, who developed the formula, also discussed plans for improving the basic technique to make it more useful and more understandable.

• **The formula**—Stripped of forbidding terminology (a defect Terborgh hopes to remedy) and elaborate mathematics, the MAPI formula is essentially a device for comparing costs of replacing equipment with the costs of not replacing. Among its assumptions are:

(1) Most machines are subject to deterioration and obsolescence. With use and the passage of time, a gap develops between their performance and that available from the best available alternative.

(2) New equipment also will deteriorate and become obsolete during its service and will become inferior to newer and better equipment in future years.

(3) The replacement decision involves not only operating cost comparisons but also capital costs—for the old machine a prospective decline in salvage value and the interest on its present value; for the new machine the loss of value over its service life and the cost of money which might be put to profitable use elsewhere.

• **The application**—MAPI has reduced its formula to a method easily applied in any shop that has the right cost data. (This is of prime importance, as a mistake in one of the cost estimates can easily provide the wrong answer.) A standard MAPI form lists the cost and income advantages of present and proposed equipment, and a chart provides the proper percentage to apply to capital cost of proposed equipment for the final comparison.

Among the advantages claimed for the MAPI method are:

• It takes account of all the prospective costs and advantages (except intangibles) involved in an equipment replacement decision and ignores costs that are not relevant.

• It forces users of the analysis to make close estimates of costs they might otherwise overlook.

• It takes a realistic view of the capacities of new equipment. Recognizing that new equipment will gradually become inferior to future equipment not yet available, it gives a comparison of the cost of not replacing equipment now and waiting until the savings reach some arbitrary figure.

At the Beloit seminar some quarrels were raised over technical features of the MAPI formula, such as the rate of interest that should be charged in calculating cost of new equipment and the pattern of deterioration and obsolescence. But most of the participants considered that the MAPI approach had made a material contribution to the analysis of equipment replacement opportunities in their own companies.

• **What it means to construction**—Scarcity of some types of construction equipment makes scientific replacement methods an academic consideration to contractors in some areas now. The problem often is finding new equipment rather than justifying its purchase, and old equipment may continue in precisely its present use. Also, MAPI has not yet come out with an application of its formula to the lease-or-buy problem, frequently the key decision on construction equipment.

Successful use of the MAPI formula and similar methods by producers of construction equipment, however, indicates that they will soon be urged on users of such equipment. Some of the companies represented at the seminar already use equipment analysis as a selling device for machine tools and textile machinery. The MAPI formula is likely to be an even more attractive selling gimmick once its terminology is simplified.

• **An obstacle**—One of the principal obstacles to application of the present MAPI method to construction is the extreme difficulty of estimating costs and "output" levels under widely varying and uncertain conditions. In industry it has proved easiest to use the MAPI formula where a piece of equipment is in fairly steady service on the same job in the same place and where the level of output can be gauged. The estimates possible in construction are often too rough to justify a highly sophisticated and precise method of analysis.

Experience in industry nevertheless shows that cost savings result from the painstaking examination of equipment that MAPI approach requires. This was the conviction of the engineers, accountants, and production executives at the Beloit seminar. And the application of similar methods to construction equipment may yield the same sort of return.

June Home Starts Stay Close To 1,300,000 Annual Rate

Housing starts during June continued to taper off, as reported by the Bureau of Labor Statistics. There were 129,000 starts during the month, the third highest on record but slightly less than the May figure estimated by BLS.

On a seasonally adjusted annual basis, private home starts are estimated at 1,320,000 for June. That's a preliminary figure, and it's slightly above the preliminary estimates for April and May. However, BLS has also just revised its preliminary estimate for March downward sharply—1,407,000 to 1,367,000.

Housing observers now are forecasting that private starts will hold close to the June annual rate for the rest of

(Continued on page 169)

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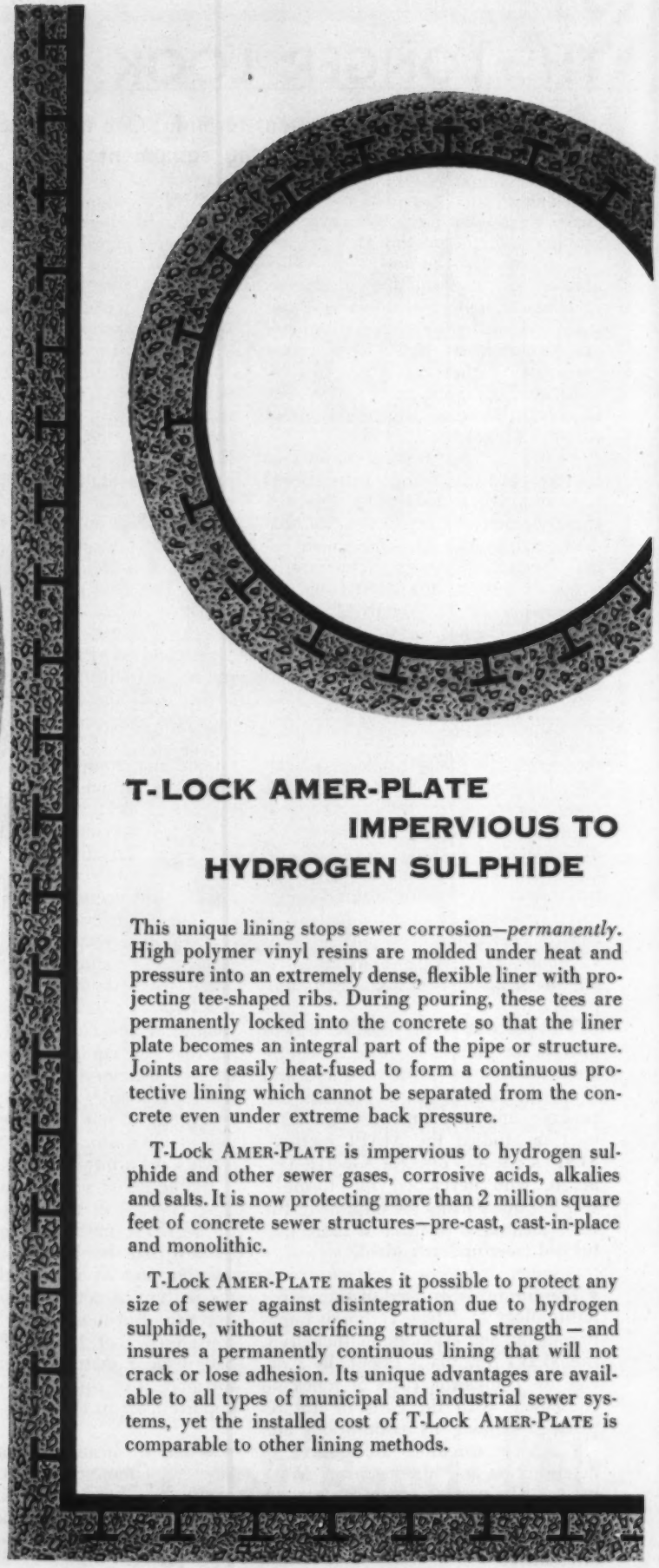

T-LOCK AMER-PLATE IMPERVIOUS TO HYDROGEN SULPHIDE

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T-Lock AMER-PLATE is impervious to hydrogen sulphide and other sewer gases, corrosive acids, alkalies and salts. It is now protecting more than 2 million square feet of concrete sewer structures—pre-cast, cast-in-place and monolithic.

T-Lock AMER-PLATE makes it possible to protect any size of sewer against disintegration due to hydrogen sulphide, without sacrificing structural strength — and insures a permanently continuous lining that will not crack or lose adhesion. Its unique advantages are available to all types of municipal and industrial sewer systems, yet the installed cost of T-Lock AMER-PLATE is comparable to other lining methods.

. . . June starts

the year—around 1,300,000 for 1955. So far, starts are second only to the record set in 1950.

Meanwhile, it is interesting to note that the number of proposed homes for which the Veterans Administration received appraisal requests dropped nearly 25% in June. VA-insured homes have been a particularly important element in the housing boom since Congress liberalized housing credit last year.

Appraisal requests for proposed homes fell off from more than 69,000 in May to a little under 52,500 in June. This was the first big drop in requests since the monthly rate started a steady climb 18 months ago. Up to that time the number had averaged only 20,000 a month for the previous two years. The May-June decrease points to a slight reduction of home-building three to six months ahead of operative builders.

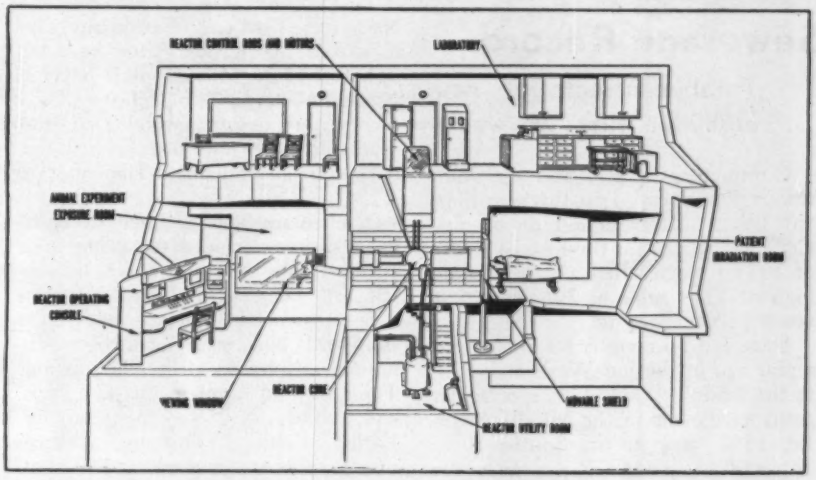
• **Vacancy rate**—However, there is still a strong demand for homes. The Census Bureau last week published its first survey of vacancies since early 1950. It shows that the vacancy rate is still remarkably low—2.2% for all U.S. dwellings during the second quarter, compared with 1.6% in the 1950 survey. A 3% vacancy rate is considered normal.

This year's survey showed that more than four times as many rental units were vacant as there were houses up for sale.

• **Warning note**—Only one warning note of any substance has been sounded by public officials. That was the Federal Reserve Bank of New York's recent crackdown on mortgage warehousing by member banks.

This practice has been spreading fast in recent months. It consists of an arrangement by a life insurance company or other mortgage lender to have a commercial bank hold its mortgage temporarily and advance the funds to the mortgage borrower. The Fed says it will not allow its member commercial banks to turn around and borrow money from it for this purpose.

Similar advice against banker competition for warehousing of mortgages had been dropped in the ear of bank officers around the country by Thomas J. Sweeney, assistant deputy administrator of loan guaranty in the Veterans Administration—and probably by other housing officials. The effects have shown up in tighter lending rules by banks on the West Coast and elsewhere.



MEDICAL REACTOR—This sketch shows details of the first atomic reactor specifically designed for medical treatment. Uranium in a stainless steel core will provide radiation for experiments which may lead to treatment of deep-seated cancer.

Now Comes a Nuclear Medical Center

A special reactor will be built for the new Medical Center of the University of California at Los Angeles by the Nuclear Engineering and Manufacturing Division of North American Aviation, Inc. The reactor will be ready within a year.

The reactor core, containing a uranium solution (sketch, above) will be inside a 5 x 5 x 8 stack of graphite bars, shielded by five feet of high-density concrete. Radiation ports will lead from the core to a patient-treatment room, laboratory, and animal-research room.

The underground structure housing the complete installation will be about 45 ft wide, 60 ft long, and 27 ft high. It will be self-contained, with no radioactive waste going outside. The structure will cost $400,000, and the reactor itself $150,000 ($75,000 will be contributed by the Atomic Energy Commission). Welton Becket & Associates will be architects.

In addition to other medical work, the reactor is designed to treat inoperable cancers by providing controlled radiation. But Dr. Stafford L. Warren, Dean of UCLA Medical School, says it won't be available for patients until at least 1957. The reactor will have to be "calibrated" first—physical methods must be developed for measuring both radiation output and the absorption of this energy in living tissue. Then the reactor will have to be tested on animals.

• **Four reactors**—By the time this reactor is finished, North American will have designed and built four reactors, all in California. Two other research reactors are working on AEC research, one at North American's Downey plant and the other at Livermore Research Laboratory. A power plant of 20,000 kw capacity is being built about 30 mi from Los Angeles. A fifth reactor designed for industrial research also is being built at Downey for Armour Research Foundation.

Denver-Boulder Pike Retires More Bonds Ahead of Schedule

Increasing traffic on the Denver-Boulder Turnpike is making it possible for more bonds to be called for redemption ahead of schedule. If the present rate of increase continues, the bonds could be paid off six years ahead of schedule, in 1974.

The Colorado Department of Highways is calling $151,000 of bonds out of a block of $1 million that were scheduled to be paid off in 1980 when the original $6.3 million bond issue was sold. Since 1952 it has been able to call $480,000 in bonds, including the present securities. And it has not yet even reached the first date on its retirement schedule, which calls for $115,000 in bonds to mature in September, 1956.

In order to call bonds ahead of time, the borrower has to pay a premium to security-owners. But according to H. Rodney Anderson, who handles such matters for the Colorado department, his agency will have paid about $14,000 in premiums and thereby saved $357,000 in interest.

Sewerage Record

Total contracts at new high for first 28 weeks

Contractors have signed up more sewerage business so far this year than any other similar period on record. Contract awards for the first 28 weeks of 1955 have reached a new all-time high of $214 million, 3% above last year's previous record.

Sewerage business is up 36% from a year ago in the Far West, and 35% in the Middle West. Less spectacular gains have come in the Middle Atlantic, 14%, and in the South, 10%. In contrast, sewerage contracts are down 20% from last year in the West of Mississippi area and have dropped 48% in New England. However, the sharp percentage drop in New England is due to the unusual high volume of last year's awards.

• **Top region**—The surge in the Middle West makes it the top region in 1955 for sewerage contracts, with $60 million in awards during the first 28 weeks.

The Middle Atlantic has the second largest sewerage volume, $43 million, whereas it led in '53 and '54 awards.

Sewerage awards are lower than in the past two years in the West of Mississippi region which has $35 million so far in '55. But a sharp upswing is under way in the Far West where awards have jumped to $30 million so far. This increase continues the rising trend during 1954.

• **Backlog**—Backing up the current high level of sewerage awards is a backlog of projects in the planning stage. These projects have a total estimated cost of $3 billion, about seven years work at the record rate of $431 million in 1953. New jobs with a total estimated cost of $197 million have been proposed this year, 12% more than a year ago though less than the big year 1953.

Business briefs . . .

• **Texas petrochemical plant**—Texas Butadiene & Chemical Corp. is building a unique petrochemical plant in Houston. The $26 million facility will produce, alternately, aviation gasoline or alkylates for blending into motor fuels and butylenes. Butadiene will also be made for synthetic rubber, nylon, and other products.

• **Ford Motor Co.** announces a $10-million glass manufacturing plant in Nashville, Tenn. The company says it looked at possible sites in every state east of the Mississippi. It selected Nashville because of cheap TVA power and cheap natural gas, plus availability of raw materials, transportation, and adequate labor.

• **Baseball and hotels**—Since the Baltimore Orioles decided to spring train at Scottsdale, Arizona, which bills itself as "The West's Most Western Town", two $1-million hotels and a muncipal ball park have been announced. John B. Mills, Phoenix and Texas oil and hotel magnate, says he will build a 250-room structure. Earlier, Frank J. Durham, Chicago insurance man, started a 150-room hotel.

• **Pipeline program**—Standard Oil of California will install a 20-in. crude oil line to replace two 8-in. lines between Wink, Texas, and El Paso.

• **Expanding Bacchus**—Hercules Powder Co. will spend $2 million in expanding and modernizing its Bacchus (Utah) dynamite plant, as part of a shift of dynamite production from Hercules, California. The California plant will be devoted to nitrogen products and other chemicals.

• **Richmond-Petersburg Turnpike**—The Authority expects a final engineers' report on location and cost by mid-August, and hopes to sell bonds as early as September. Plans are to have a group composed of Virginia investment firms, along with three New York houses, submit a negotiated bid. This differs from the usual practice of competitive bidding for turnpikes.

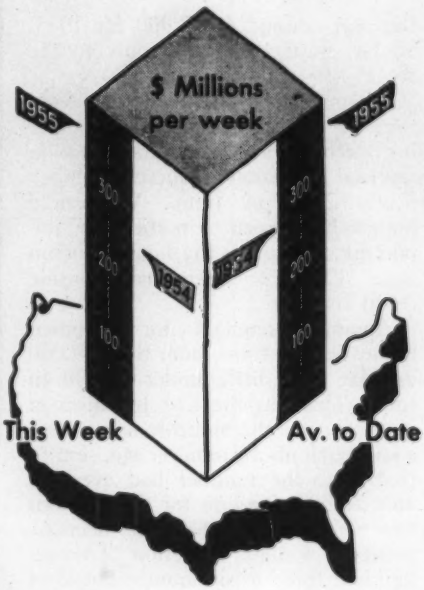
• **Stainless steel capacity** of U. S. Steel Corp. will be be bosted. Sheet and strip facilities will be increased at Gary, Indiana and new facilities put in at Vandergrift, Pa. The Vandergrift plant will have a capacity of over 10,000 tons of continuous cold-rolled sheet.

• **Fighting the power company**—A group of more than 90 Norfolk (Va.) businessmen and companies, called the Tidewater Committee for Electric Users, is studying the possibility of building its own power plant. It thinks the rates charged by Virginia Electric Power Co. are too high.

• **Another fertilizer plant**—Southwest Agrochemical Corp. will start this fall on a $2.5-million plant near Phoenix, Ariz. Full operation is expected in 1½ years.

Activity This Week

As reported to ENR (in millions of dollars)



Amount of contracts let

	This Week	Cumulative 29 wks 1955	1954	% chge
Federal	$42.7	$1,091.4	$722.2	+51
State and Municipal	89.9	2,944.6	2,672.4	+10
Total Public	132.6	4,036.0	3,394.6	+19
Total private	228.1	6,706.1	4,421.8	+52
U. S. Total	$360.7	$10,742.1	$7,816.4	+37

Contracts by type of work

Waterworks	$4.8	$147.5	$125.0	+18
Sewerage	5.2	219.5	213.7	+3
Bridges	12.7	262.7	256.9	+2
Highways	33.4	1,192.1	983.4	+21
Earthwork, Waterways	2.5	312.1	161.8	+93
Buildings:				
Public, excl. hsg.	36.1	981.9	1,003.8	—2
Housg., public	7.0	163.7	139.1	+18
Housg., private	91.2	3,712.9	2,448.2	+52
Commercial	52.6	1,013.5	710.9	+43
Industrial	78.0	1,534.8	1,038.9	+48
Unclassified	37.2	1,201.4	734.7	+64
Total	$360.7	$10,742.1	$7,816.4	+37

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

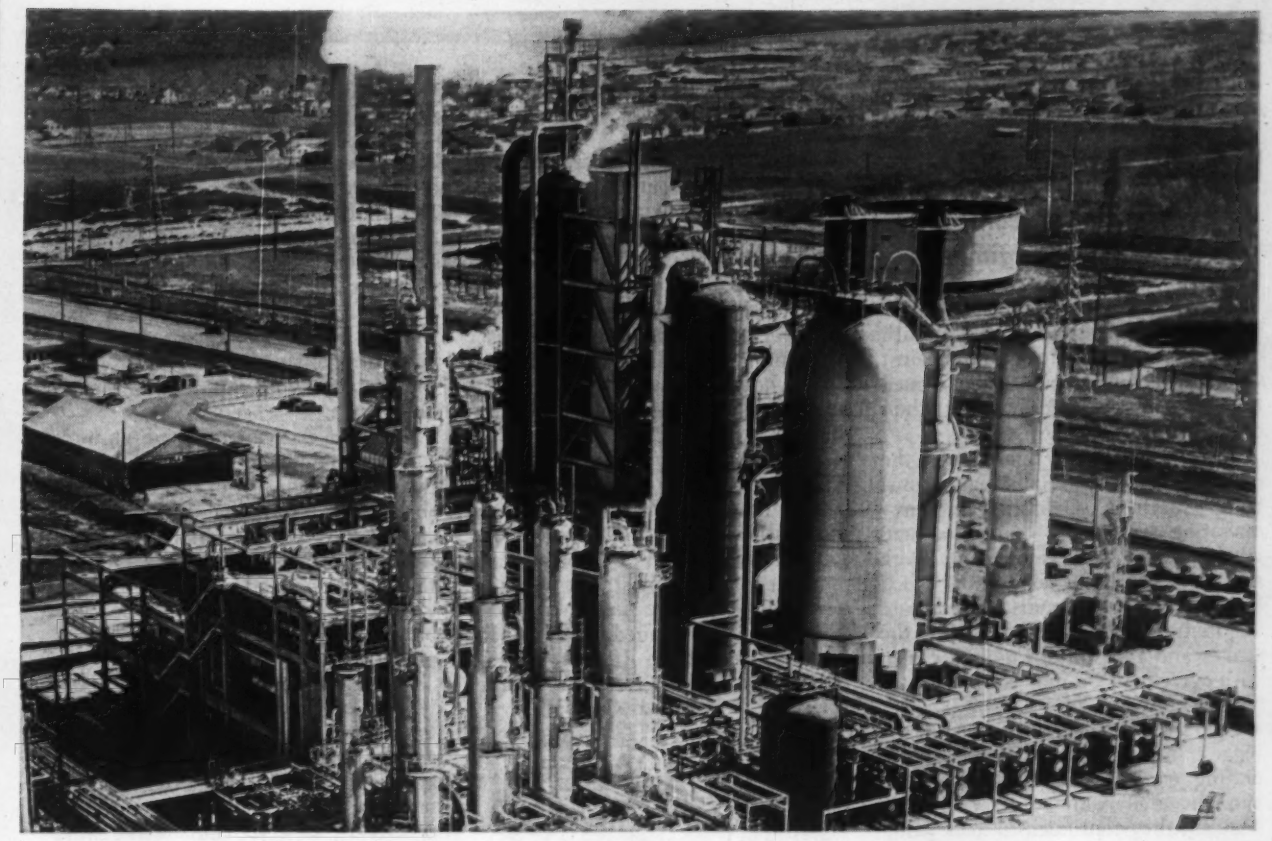
New capital for construction

(millions of dollars)	Week of July 14 1955	Cumulative 28 wks 1955	% chge '54-'55
Corporate securities	$12.4	$1,912.1	+13
State and municipal:			
All except housing	46.6	2,380.0	—26
Housing	...	63.2	—9
Federal loans	7.9	78.5	+6
Federal aid	647.5	742.5	+1250
Total non-federal	$ 814.4	$5,176.3	+1
Federal appropriations:			
In U. S.	337.2	456.0	+714
Outside U. S.	28.5	41.9	+811
Total new capital	$1,180.1	$5,674.2	+10

ENR cost and volume indexes, 1955

		Base years = 100 1913	1926	1949
Construction Cost	7/14	671.41	322.75	140.75
	6/30†	660.09	317.31	138.38
Building Cost	7/14	477.40	258.07	135.71
	6/30†	467.52	252.73	132.90
Volume	June	633	257	183
	May	731	297	211

†Official monthly index for July



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Employer Shutdown

West Coast contractors try new strike gimmick

The tables were turned on some of the building trades this month when several contractor groups against whom strikes had been called evened the score with shutdowns of their own.

In halting their operations, the contractors were retaliating against three southern California unions—operating engineers, plumbers and laborers, who had engaged in work stoppages after the contractors failed to meet their demands in contract negotiations. By last week, both the strikes and the shutdowns had ended with agreement on new contracts.

• **Operating engineers**—Involved in the biggest stoppage were some 8,000 operating engineers in Local 12. Although their old contract expired May 15, they continued to work pending negotiations until June 20, when walk-offs occurred on a few projects and soon spread to a near-complete shutdown in an 11-county area. Late in June, the four contractor groups that were negotiating jointly (AGC, Home Builders Institute, Building Contractors Assn., and Excavating and Grading Contractors Assn.) retaliated with a shutdown of all work for operating engineers, saying, "A strike against any member is a strike against all." Members of the four groups handle about 90% of all construction in the area.

The upshot was a tentative agreement (ENR July 14, p. 105) which has now been ratified and which gives the engineers most of what they asked for. It's a two-year contract, with a wage reopening clause effective Feb. 15, 1956, granting wage increases ranging from 10 to 28 cents (70% retroactive to June 1 and the balance effective Oct. 1). The AGC took the lead in reaching the settlement which reportedly caused some ill feeling among the other contractor groups.

• **Plumbers**—AFL plumbers, who engaged in scattered walk-offs during the course of contract negotiations, soon found themselves facing a retaliatory shutdown by members of the Plumbing, Heating and Piping Employers Council of Southern California.

The new contract which resulted calls for a 30-cent wage increase spread over two years, plus a one-cent contribution to the union's apprentice and journeyman training programs, effective July 1, 1956.

In another phase of the tug-of-war, the council filed suits against the union and a council member for allegedly violating the master contract by signing an individual agreement. But when the new contract was finally reached, the lawsuits were withdrawn.

• **Laborers**—Similar maneuvering occurred during negotiations between the Southern California Concrete Masonry Assn. and AFL laborers and plumbers. Scattered strikes were followed by a complete shutdown.

The stalemate ended in a one-year contract, granting a 10-cent increase retroactive to June 1 with another 2.5 cents to be added Oct. 31.

Prevailing Wages

Labor Department spots some typical violations

A variety of contractor violations of prevailing wage provisions of the Davis-Bacon Act have been disclosed by investigations that were conducted by the U. S. Department of Labor in cooperation with various federal contracting agencies.

At the height of the controversy over extension of prevailing wages to the proposed federal highway program, the department surveyed the application and enforcement of the Act in the construction industry and published the results in "Construction Review".

Typical of the violations that were reported to have occurred are the following examples:

• Failure to post the schedule of approved rates in a prominent place at the construction site.

• Payment of wages lower than those approved for a particular classification.

• Classifying and paying as apprentices workers who are not "duly registered apprentices" participating in a recognized and approved training program.

• Improper classification of workers to effect lower pay scales, such as putting a man on the payroll as a laborer and assigning him work of a painter or carpenter.

• Using the illegal device of subcontracting—hiring someone to do certain work for a lump sum with materials furnished by the contractor—at a figure that averages out at less than the prescribed rate.

• Confusing the payrolls where a contractor is performing both private and federal construction, with the result that some are paid less than the approved rate.

• Hiring on a piece-rate basis, where the employe does not receive the required rate.

Some of the violations are grounds for termination of the contract, suspension of payment, or blacklisting for three years. Criminal violations are subject to prosecution by the Attorney General. In the absence of wilfulness, the contracting agency has authority to adjust the matter by ordering the proper restitution to underpaid employes.

In an attempt to make enforcement more effective, the Labor Department has agreed upon a decentralized procedure with most of the contracting agencies. This facilitates the handling of many cases at the regional level and settlement of complaints while work is still in progress.

Labor Briefs . . .

• **Apprenticeship training**—At a Washington, D. C., conference attended by labor and industry, the U. S. Department of Labor launched a drive to step up apprenticeship training in the construction industry. Growth in population to 200-million in the next 10 to 15 years, said Apprenticeship Director Patterson, is expected to require a 33% increase in construction volume.

• **Employment down**—Last month's employment in contract construction was the lowest for the month of June since 1950, according to BLS reports, despite new highs for contract awards. In only 12 states reported, however, was employment substantially below year-ago levels. Most of this year's decline has been in employment by general building contractors.

• **Third-party liability**—Focusing attention again on the question of third-party liability under workmen's compensation laws, an employe injured when the New York Coliseum collapsed has filed a $1-million third-party action against the owner, general contractors and one sub. Grounded on negligence, the suit doesn't name the direct employer, against whom such a claim is barred by law.

OFFICIAL PROPOSALS

Bids: August 2, 1955

Contract O & M—321

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
PAVING AND DRAINAGE IMPROVEMENT

Sealed proposals for furnishing all labor, material and equipment for paving and drainage improvements at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Ave., New York 11, until 11:00 A. M., Tuesday August 2, 1955, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 21, 1955

Bids: August 2, 1955

Contract O & M—320

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
SEAL COAT TREATMENTS

Sealed proposals for furnishing all labor, material and equipment for applying seal coating on weathered and worn pavement at New York International Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Ave., New York 11, until 11:00 A.M., Tuesday, August 2, 1955, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 21, 1955

Bids: August 2, 1955

Contract O & M—319

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
OUTERBRIDGE CROSSING
AND
GOETHALS BRIDGE
CONCRETE CURB WALL AND GUARD RAIL

Sealed proposals for furnishing all labor, material and equipment for constructing concrete curb wall and guard rail on the Outerbridge Crossing and the Goethals Bridge, between Staten Island and New Jersey, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Ave., New York 11, until 11:00 A.M. on the morning of August 2, 1955, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 21, 1955

Bids: August 9, 1955

New Jersey Turnpike Authority

CONTRACT NO. N-30A

Proposals are invited for Contract No. N-30A which involves the installation of new roadway, aviation and navigation lighting facilities, including three transformer stations, and other incidental work, for the Newark Airport Interchange of the New Jersey Turnpike in the City of Newark, Essex County, including ramp structures in the area and portions of the Newark Bay-Hudson County Extension viaduct, the Oak Island Viaduct and the Port Street Bridge; for the Newark Viaduct, extending from Pier W93 located on the east side of the Interchange to Pier W45 just west of Doremus Avenue in Newark; and for the Newark Bay Bridge, extending from Pier W45 in Newark to its east abutment in the City of Bayonne, Hudson County; all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Trenching and Backfilling	21,000 Lin. Ft.
Abestos-Cement Conduit	27,400 Lin. Ft.
Galvanized Wrought Iron Conduit	350 Lin. Ft.
Series Lighting Conductor in Conduit	87,000 Lin. Ft.
Exposed Series Lighting Conductor	26,000 Lin. Ft.
Lighting Standards & Luminaires	233 Units
Transformer Stations	3 Units

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Daylight Saving Time on the morning of August 9, 1955, at which time and place said proposals will be publicly opened and read.

Each bidder must submit with his proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 20, 1955, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 15, 1955

Bids: August 1, 1955

Construction of Trunk Sewer No. 4

ADVERTISEMENT

NOTICE TO CONTRACTORS

CONTRACT NO. 3
CITY OF POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

Sealed bids for Contract No. 3 for the construction of a Sanitary Sewer will be received by the Commissioner of Finance, City Hall, Poughkeepsie, New York, until 10:00 A. M. Daylight Saving Time, Monday, August 1, 1955 and there at said office and at said time will be publicly opened and read aloud.

Contract No. 3, in South Avenue, from City Line to North, includes the construction of approximately 2,800 linear feet of 24-inch to 33-inch diameter sewers and appurtenances.

Plans and Documents may be examined at no expense at the office of the Commissioner of Finance, City Hall, Poughkeepsie, New York, and copies of the same obtained there upon payment of $10.00 for each set. Any bidder upon returning said set in good condition within 30 days of the date of receiving bids will be refunded his payment, and any non-bidder upon so returning said set will be refunded $5.00.

The Plans and Documents may be examined in the office of the Superintendent of Public Works, Eastman Park, Poughkeepsie, New York, or at the office of O'Brien & Gere, Consulting Engineers, Syracuse, New York.

Each bid must be accompanied by security in amount not less than five per centum (5%) of the amount of the bid in the form and subject to the conditions provided in the Information for Bidders contained in the Contract Documents.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

DEPARTMENT OF FINANCE OF THE CITY OF POUGHKEEPSIE
By: AUBREY B. COONS
Commissioner of Finance

July 12, 1955

U. S. Government

Department of Commerce, Bureau of Public Roads, July 7, 1955. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., AUGUST 9, 1955, for Project 1D9-1E2, Colonial Parkway, James City County, Virginia. Grading and draining from College Creek to Jamestown Island. Length: 6.275 miles. The approximate quantities of the more important items are: 89,950 cu. yd. Excavation and 87,000 cu. yd. Borrow. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson St., Roanoke, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4456) will be received at Loveland, Colorado, until August 18, 1955, for furnishing labor and materials for South Platte Supply Canal Rehabilitation and Enlargement, Coal Ridge Section, Station 315+00 to Station 1026+84, Colorado-Big Thompson Project, Colorado. Location near Erie, Colorado. Principal items are 36,000 cu. yds. excavation; 53,000 cu. yds. compacting earth canal bottom; 834 cu. yds. concrete in structures; 58 M.b.m. timber in structures; and other work. Completion time 230 days. For particulars, address Bureau of Reclamation, P. O. Box 449, Loveland, Colorado; or Building 53, Denver Federal Center, Denver, Colorado.
W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: August 11, 1955

New Jersey Turnpike Authority

CONTRACT NO. W-8

Proposals are invited for Contract No. W-8 which involves paving, curb and sidewalk, topsoiling and seeding, fence and gates, area lighting, traffic signs and other incidental work in connection with construction of Service Areas 6S and 6N, in Mercer County, New Jersey, all in connection with the construction of the Widening of the New Jersey Turnpike.

The principal items of work include:

4" Topsoiling	76,000 Sq. Yds.
Macadam Base Course	79,500 Sq. Yds.
Asphaltic Concrete Pavement	79,500 Sq. Yds.
Portland Cement Concrete Pavement	4,300 Sq. Yds.
Light Standards and Bases	88 Each
Curb	25,500 Lin. Ft.

til 11:00. Sq. Yds

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Daylight Saving Time on the morning of August 11, 1955, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 21, 1955 at the office of the Authority and at the offices of the Consulting Engineers, De Leuw, Cather & Brill, 202 East 44th Street, New York 17, New York and 99 Main Street, Hightstown, New Jersey. Contract documents will be furnished upon payment of Ten Dollars ($10.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 15, 1955

Bids: August 10, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania until 10:00 a.m., Eastern Daylight Saving Time on 10 August 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Heating System for the Utility Building and Toll Plaza at the Lehigh Valley Interchange located at Route 22 By-Pass in Lehigh County, Pennsylvania, Contract No. 552-B.

The work to be performed under this contract consists of the construction of the Heating System for the Utility Building and Toll Plaza and all work incident thereto. The Utility Building and Toll Plaza are to be constructed by others. Plumbing and Electrical Work will be installed by others.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on and after 20 July 1955, at the offices of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's field office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's field office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania.

Plans and Contract Documents for this contract may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per copy.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania

Bids: August 10, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania until 10:00 a.m., Eastern Daylight Saving Time on 10 August 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the Construction of Electrical System for the Utility Building and Toll Plaza at the Lehigh Valley Interchange located at Route 22 By-Pass in Lehigh County, Pennsylvania, Contract No. 552-C.

The work to be performed under this contract consists of the construction of the Electrical System for the Utility Building and Toll Plaza and all work incident thereto. The Utility Building and Toll Plaza are to be constructed by others. Plumbing and Heating will be installed by others.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on and after 20 July 1955, at the offices of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's field office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's field office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania.

Plans and Contract Documents for this contract may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per copy.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania

Bids: August 16, 1955

Contract NYA-680.001

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEW YORK INTERNATIONAL AIRPORT
BUILDINGS NO. 200 AND 201

Sealed proposals for the construction of Buildings No. 200 and 201 for the storage of flammable materials, including paving and utilities therefor, at New York International Airport, will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, August 16, 1955, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Materials of the Authority, Room 1112. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt in duplicate will be issued. A copy of the receipt shall be delivered to Room 1112, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 21, 1955

Bids: August 10, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania until 10:00 a.m., Eastern Daylight Saving Time on 10 August 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the construction of the Utility Building and Toll Plaza at the Lehigh Valley Interchange located at Route 22 By-Pass in Lehigh County, Pennsylvania, Contract No. 552.

The work to be performed under this contract consists of the construction of the Utility Building and Toll Plaza and all work incident thereto under this contract; not including, however, the Plumbing System, Heating System, Electrical Work or the Seeding and Sodding, except as noted in the specifications or as shown on the contract drawings.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on and after 20 July 1955, at the offices of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's field office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's field office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania.

Plans and Contract Documents for this contract may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per copy.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-4469) will be received at Denver, Colorado, until August 30, 1955, for furnishing six 7.25-foot by 7.75-foot outlet gates, including handling equipment for the outlet works at Glendo Dam, Glendo Unit, Oregon Trail Division, Missouri River Basin Project, Wyoming. Delivery is desired within 360 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

SEARCHLIGHT SECTION

OFFICIAL PROPOSALS

Bids: August 2, 1955

Contract O & M—322

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
OUTERBRIDGE CROSSING
PAVEMENT RESURFACING ON THE MAIN SPAN
AND NEW YORK APPROACH

Sealed proposals for furnishing all labor, material and equipment for resurfacing the pavement on the main span and New York approach of the Outerbridge Crossing, between Tottenville, Staten Island, and Perth Amboy, New Jersey, will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Ave., New York 11, until 11:00 A. M., Tuesday, August 2, 1955, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon deposit of $10.00 per set. Deposit must be delivered to Treasury Dept., Room 1001, where a receipt in duplicate will be issued. The duplicate copy of the receipt is then to be delivered to the Department of Purchase and Administrative Services, and you will be furnished with the contract documents. The deposit will be remitted if the documents are returned in good condition, not later than thirty days after the opening of proposals. The deposit will be forfeited if the documents are not returned within thirty days.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, July 21, 1955

Bids: July 28, 1955

Proposal No. 638

ADVERTISEMENT
THE PORT OF NEW YORK AUTHORITY
NEWARK AIRPORT
STEAM GENERATORS

Sealed proposals for furnishing and delivering two 300 HP steam generators to site of installation in boiler room of Brewster Hangar at Newark Airport will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Ave., New York 11, until 11:00 A. M., Thursday, July 28, 1955, at which time and place said proposals will be opened and read.

Contract documents may be seen at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon request.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

U. S. Government

Department of Commerce, Bureau of Public Roads, July 6, 1955. SEALED BIDS will be received at the office of the Division Engineer, Bureau of Public Roads, 1440 Columbia Pike, Arlington, Virginia, until 11:00 a.m., D.S.T., AUGUST 4, 1955, for Project 2G2, Blue Ridge Parkway, Watauga County, North Carolina. Grading, draining, crushed gravel or crushed stone base course and other work, from near Sandy Flat Gap 4.633 miles westerly. The approximate quantities of the more important items are: 354,000 cu. yd. excavation, 48,000 tons crushed gravel or crushed stone base course, 850 cu. yd. Stone Masonry and 3,730 lin. ft. Concrete Culvert Pipe. Minimum wage rates have been fixed as required by law. Plans, specifications, and proposal forms are available upon request at the address given above or Bureau of Public Roads, 920 South Jefferson Street, Roanoke, Virginia. H. J. Spelman, Division Engineer.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4467) will be received at Albuquerque, New Mexico, until August 23, 1955, for furnishing labor and materials for earthwork, clearing and structures for Rehabilitation of Drains, Unit AW-2, Middle Rio Grande Project, New Mexico. Location near Albuquerque, New Mexico. Principal items are clearing and cleaning 12.2 miles of open drains; 6,300 cu. yds. excavation; 2,580 lin. ft. of CMP, 18 to 60-inch diameters; and other work. Completion time 260 days. For particulars, address Bureau of Reclamation, P.O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

OFFICIAL PROPOSALS

Bids: August 11, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF DRAFT TUBE PIER NOSES
FOR
BARNHART ISLAND POWER PLANT
SPECIFICATIONS NO. PA-5-12502
ST. LAWRENCE CONTRACT NO. P21

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the manufacture and furnishing of sixteen (16) sets of draft tube pier noses for Barnhart Island Power Plant and delivery thereof f.o.b. the Authority's classification yard, Massena, New York in the following ways:

(1) If brought in person, on the day of receiving bids until 10:30 A. M. Eastern Daylight Saving Time on the 11th day of August, 1955, 270 Broadway, Hearing Room C on the sixth floor, New York 7, New York.

(2) If mailed in, until 10:15 A. M. Eastern Daylight Saving Time, on the 11th day of August, 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposal will be publicly opened and read aloud at the time and at the address given in (1) above.

Bids will be entertained for cast steel or welded structural steel draft tube pier noses with base pads, anchor bolts, and accessories. The work involves the casting or fabrication of approximately 1,000 tons of metalwork.

Plans, specifications and proposal forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. A bid deposit will be required with each bid in an amount not less than 10 per cent of the maximum price bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

July 12, 1955

Bids: August 10, 1955

Pennsylvania Turnpike Commission
Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Pennsylvania Turnpike Commission, through the Chairman, 11 North Fourth Street, Harrisburg, Pennsylvania until 10:00 a.m., Eastern Daylight Saving Time on 10 August 1955, and immediately thereafter will be taken to the Public Utility Commission's Hearing Room No. 1, North Office Building, State Capitol, Harrisburg, Pennsylvania and publicly opened and read aloud for the following contract:

For the construction of Plumbing System for the Utility Building and Toll Plaza at the Lehigh Valley Interchange located at Route 22 By-Pass in Lehigh County, Pennsylvania, Contract No. 552-A.

The work to be performed under this contract consists of the construction of the Plumbing System for the Utility Building and Toll Plaza and all work incident thereto. The Utility Building and Toll Plaza are to be constructed by others. Heating and Electrical Work will be installed by others.

Copies of plans, specifications and Contract Documents are on file and open to public inspection on and after 20 July 1955, at the offices of the Pennsylvania Turnpike Commission in Harrisburg, Pennsylvania, at the Commission's field office in Conshohocken, Pennsylvania, 10th Avenue and Hallowell Street and at the Commission's field office in Lehighton, Blakeslee Boulevard, Lehighton, Pennsylvania.

Plans and Contract Documents for this contract may be obtained from the Commission upon deposit of Ten ($10.00) Dollars for each set. No refund will be made for plans returned unless the project is withdrawn from letting by the Pennsylvania Turnpike Commission.

Copies of Specifications for grading, drainage, paving and structures may be purchased from the Pennsylvania Turnpike Commission for the sum of Five ($5.00) Dollars per copy.

Remittances are payable by check or P. O. money order to the Pennsylvania Turnpike Commission and must accompany requests for drawings, specifications and contract documents.

The character and amount of bid security to be furnished by the bidder is stated in the Instructions to Bidders.

The Commission reserves the right to waive any informalities in or to reject any or all bids.

No bids may be withdrawn for thirty (30) days after the scheduled closing time for receipt of bids.

PENNSYLVANIA TURNPIKE COMMISSION
James F. Torrance
Secretary and Treasurer

Harrisburg, Pennsylvania

Bids: August 1, 1955

Construction of Storm Water Sewers

ADVERTISEMENT
NOTICE TO CONTRACTORS
VASSAR LAKE DRAINAGE AREA
CITY OF POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

Sealed bids for Contract No. 1, Construction of Storm Water Sewers in the Vassar Lake Drainage Area, City of Poughkeepsie, will be received by the Commissioner of Finance, City Hall, Poughkeepsie, New York, until 10:00 A. M., Eastern Daylight Time, Monday, August 1, 1955, and there at said office and at said time will be publicly opened and read aloud.

This project includes the construction of approximately 943 linear feet of 78-inch reinforced concrete culvert pipe sewer, approximately 246 linear feet of 54-inch reinforced concrete culvert pipe sewer, and 1479 linear feet of 42-inch reinforced concrete culvert pipe sewer and appurtenances.

Plans and Documents may be examined at no expense at the office of the Commissioner of Finance, City Hall, Poughkeepsie, New York, and copies of the same obtained there upon payment of $10.00 for each set. Any bidder upon returning said set in good condition within thirty (30) days of the date of receiving bids will be refunded his payment, and any non-bidder upon so returning said set will be refunded $5.00

The Plans and Documents may be examined in the office of the Superintendent of Public Works, Eastman Park, Poughkeepsie, New York, or at the office of O'Brien & Gere, Consulting Engineers, 400 East Genesee Street, Syracuse, New York.

Each bid must be accompanied by security in amount not less than five per centum (5%) of the amount of the bid in the form and subject to the conditions provided in the Information for Bidders contained in the Contract Documents.

The right is reserved to waive any informalities in the bids and to reject any or all bids.

DEPARTMENT OF FINANCE OF THE CITY OF POUGHKEEPSIE
By: AUBREY B. COONS
Commissioner of Finance

Dated: July 12, 1955

Bids: August 16, 1955

Construction of 30-inch and 36-inch diameter water supply mains Arlington County, Virginia

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all materials and equipment and doing all work required for the construction of 30 and 36-inch diameter water supply mains, as described below, will be received by the Purchasing Agent in Room 213, in the Court House Building at Arlington County, Virginia, until 11:00 A. M., Eastern Daylight Savings Time, on August 16, 1955, and there publicly opened and read immediately thereafter:

CONTRACT 1
CONSTRUCTION OF 30- AND 36-INCH DIAMETER WATER SUPPLY MAINS AND APPURTENANCES.

(Continued on following page)

OFFICIAL PROPOSALS

(Continued from preceding page)

1. Location: The work is located in Arlington County, Virginia, on public streets from Fairfax Drive to 1st Place N.
2. Type of Work: The principal items of work include the following: — Approximately 2800 lin. ft. of 36-inch and 2050 lin. ft. of 30-inch steel or reinforced concrete water pipe together with manholes, 18-inch diameter cone valves, miscellaneous gate valves, blow-off, air release or inlet valves, connections to existing water mains, etc.
3. Copies of Plans and Specifications, Information for Bidders, Bid Forms and other bidding and contract documents may be examined at the office of the Chief Engineer of the Water Division, County Court House, Arlington, Va.; at Dodge Reports, 900 F. Street, N.W., Washington, D. C. and at the office of ALEXANDER POTTER ASSOCIATES, CONSULTING ENGINEERS, 50 CHURCH ST., NEW YORK (7), N. Y.
4. Copies of Plans, Specifications and Bidding Documents may be obtained from the Purchasing Agent in Room 213, Court House Building at Arlington, Virginia upon deposit of THIRTY ($30.00) DOLLARS PER SET.

Full refund will be made to actual bidders for return of One (1) Set, in good condition, within two weeks after closing date for receipt of bids; refund for return of all other sets, in good condition, WITHIN THE SAME PERIOD, will be Fifty (50%) percent of the deposit. No refund will be made for return of documents in poor condition or later than the two week period stipulated.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia will be required to show evidence of a certificate of registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

All bids must be accompanied by a certified check or acceptable bidder's bond in an amount of not less than Five Per Cent (5%) of the amount of the bid, made payable to the Treasurer of Arlington County, as bid security.

The successful bidder will be required to furnish a Performance Bond conditioned upon the faithful performance of the Contract and upon payment of all persons supplying labor and furnishing materials on the construction of the work.

No bidder may withdraw his bid within (30) days after actual date of opening thereof.

The County Board of Arlington County, Virginia, reserves the right to reject any or all bids and to waive any informality in the bids.

ARLINGTON COUNTY, VIRGINIA
By: A. T. Lundberg
County Manager

Bids: August 18, 1955

Water System Improvements

ADVERTISEMENT FOR BIDS

Sealed proposals for furnishing all labor and materials for the construction of:

WATERWORKS IMPROVEMENTS in Marcus Hook and S.E. Chester, consisting of Reinforcing Mains; and for a PRESSURE IMPROVEMENT PROGRAM in Nether Providence, consisting of an Elevated Water Storage Tank, Booster Pumping Station, and Reinforcing Mains; and for

FILTER PLANT EXTENSIONS at Pine Grove, on the Octoraro Creek, Chester County, Pa.

will be received by the Executive Manager of the Chester Municipal Authority at the Authority Office, 5th and Welsh Streets, Chester, Pennsylvania, until 2:00 P.M., E.D.S.T., Thursday, August 18, 1955, at which time the proposals will be publicly opened and read aloud.

The work will be divided into the following contracts:

CONTRACT NO. 1—WATER WORKS IMPROVEMENTS, MARCUS HOOK REINFORCING MAINS

(Approximately 13,200 lineal feet of 20 inch cement-lined mechanical joint cast iron pipe, fittings, and appurtenances, or alternate installation of 20" prestressed concrete cylinder pipe, in Blueball Ave. from 10th St. to Meeting House Road, and in Meeting House Rd. from Blueball Ave. to Market St.)

CONTRACT NO. 2—WATER WORKS IMPROVEMENTS, S.E. CHESTER REINFORCING MAINS

(Approximately 5,600 lineal feet of 18" cement-lined mechanical joint cast-iron pipe, fittings and appurtenances, and approximately 3,600 lineal feet of Owner-furnished 12 inch bell-and-spigot cast iron pipe, in Third St. from Market St. to Hinkson St., thence in Hinkson St. to McDowell St., thence to Elsinore Place, and in 8th St. from Hinkson St. to Morton St., in 12th St. from Chestnut St. to Edgemont Ave., in 14th St. West of Melrose Ave., and in 14th St. from Upland St. to Edgemont Ave.)

CONTRACT NO. 3—NEITHER PROVIDENCE PRESSURE IMPROVEMENT PROGRAM

(New 100,000 gal. Elevated Steel Water Storage Tank or alternate reinstallation of existing elevated tank, Booster Pumping Station, and approximately 2,600 lineal feet of Owner-furnished 12" bell and spigot cast iron pipe in Harvey Rd. from Chester Rd. to Willow Rd., thence in Willow Rd. to Blakeley Rd., in Media Parkway from Willow Rd. to Moore Rd., thence in Moore Rd. to elevated tank at Hastings Ave.)

CONTRACT NO. 4—STRUCTURAL WORK FOR FILTER PLANT EXTENSIONS

CONTRACT NO. 5—MECHANICAL WORK FOR FILTER PLANT EXTENSIONS

CONTRACT NO. 6—ELECTRICAL WORK FOR FILTER PLANT EXTENSIONS

CONTRACT NO. 7—HEATING AND VENTILATING WORK FOR FILTER PLANT EXTENSIONS

Contractors may submit separate proposals on Contracts Nos. 1, 2, 3, 4, 5, 6 and 7, may bid contracts Nos. 1, 2, and 3 in combination; and may bid Contracts Nos. 4 and 5 in combination.

Information for Bidders, Forms of Proposal, Specifications, Form of Contract and Plans may be examined at the office of the Chester Municipal Authority, or at the Office of Albright & Friel Inc., Consulting Engineers, 121 S. Broad St., Philadelphia 7, Pennsylvania

Plans for Contracts Nos. 1, 2 and 3 are contained in one set, and Plans for Contracts Nos. 4, 5, 6 and 7 are contained in one set. Copies of either set may be obtained at the office of Albright & Friel Inc. upon a deposit of $50.00 for each set of documents. If the documents are returned in good condition within FIVE days after the opening of bids, the full amount of deposit will be returned to each actual bidder for one set of documents, and other deposits will be refunded with a deduction of $25.00 to defray the cost of reproduction. If the documents are not returned within the time stated, the entire amount of deposit will be forfeited.

A certified check or bid bond, drawn to the order of the Chester Municipal Authority, equal to five percent (5%) of the amount of bid must be submitted with the proposal.

All proposals are to be addressed to the Chester Municipal Authority, 5th and Welsh Sts., Chester, Pennsylvania, to Attention of Mr. Clarence L. Conner, Executive Manager, and shall be submitted in a sealed envelope, plainly marked with Contract No. or Nos. for which proposals are submitted, and with name of bidder indicated.

The Chester Municipal Authority reserves the right to reject any or all bids, to waive any informality in bids and to award each contract separately or in combinations indicated, as may be deemed by the Authority to be in the Authority's best interest.

No bidder may withdraw his bid within sixty (60) days after the actual date of the opening thereof.

CLARENCE L. CONNER
EXECUTIVE MANAGER

July 14, 1955

Bids: August 9, 1955

Power Authority of the State of New York

ST. LAWRENCE POWER PROJECT
ADVERTISEMENT FOR PROPOSALS
FOR
THE FURNISHING AND DELIVERY OF 15 KV METALCLAD SWITCHGEAR AND APPURTENANCES
SPECIFICATIONS NO. PA-5-14025
ST. LAWRENCE CONTRACT NO. P18

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF YORK will receive sealed proposals for the design, manufacture and furnishing of 15 kv Metalclad Switchgear and Appurtenances and delivery thereof, f. o. b. the Authority's classification yard, Massena, New York, as follows:

(1) If brought in person on the day of receiving bids until 10:30 A. M. Eastern Daylight Saving Time on the 9th day of August 1955, 270 Broadway, Hearing Room C on the sixth floor, New York, New York.

(2) If mailed in until 10:15 A. M. Eastern Daylight Saving Time on the 9th day of August 1955, at the Authority's office, 270 Broadway, Room 1300, New York 7, New York.

The proposals will be publicly opened and read aloud at the time and at the address given in (1) above. Bids will be entertained for the 15 kv Metalclad Switchgear, associated equipment and services in accordance with the bidding schedule. Erection at the site of installation will be done by others but services of erecting engineers shall be provided by the manufacturers if and when required. Delivery of the 15 kv Switchgear and Appurtenances, will be required by September 1, 1957.

Plans, Specifications and Proposal Forms for the work will be on file in the Authority's office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and the Hydro-Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario, may be inspected by prospective bidders during office hours, and may be obtained from the Power Authority of the State of New York, 270 Broadway, Room 1300, New York 7, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents and Five ($5.00) dollars per set for additional sets, no part of which will be refunded. Two sets must be returned with each bid.

Bids will not be restricted to American manufacturers.

Bids must be made in duplicate upon the proposal forms included in and bound with the Contract Documents. Bid deposit will be required with each bid in an amount not less than 10 per cent of the gross sum bid for the schedule.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

7/8/55

Bids: August 16, 1955

New Jersey Turnpike Authority

CONTRACT NOS. N-63A, N-63B, N-63C, N-63D and N-63E

Sealed proposals are invited for Contract Nos. N-63A, N-63B, N-63C, N-63D and N-63E in connection with the Utility Buildings, Toll Islands and associated work for the Holland Tunnel, Jersey City and Bayonne Interchanges on the Newark Bay-Hudson County Extension of the New Jersey Turnpike, as follows:

Contract No. N-63A—General Construction
Contract No. N-63B—Structural Steel and Miscellaneous Iron Work
Contract No. N-63C—Plumbing
Contract No. N-63D—Heating and Ventilating Work
Contract No. N-63E—Electrical Work

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 O'Clock Eastern Daylight Saving Time, on the morning of August 16, 1955, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after July 22, 1955, at the office of the Authority and at the office of the Consulting Architects, Lorimer and Rose, 254 West 54th Street, New York 19, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set, upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

July 15, 1955

EMPLOYMENT OPPORTUNITIES

The Advertisements in this section include all employment opportunities—executive, management, technical, selling, office, skilled, manual, etc.

Positions Vacant
Positions Wanted
Part Time Work
Civil Service Opportunities....
Selling Opportunities Wanted
Selling Opportunities Offered
Employment Agencies
Employment Services
Labor Bureaus

DISPLAYED —RATES— **UNDISPLAYED**

The advertising rate is $24.25 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

An advertising inch is measured ⅞" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

$1.80 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Box Numbers—counts as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW ADS to ENGINEERING NEWS RECORD, 330 W. 42nd St., N. Y. 36, N. Y. for August 4th issue closing July 25th

ENGINEERS — DESIGNERS

Chemical - Mechanical - Electrical - Structural - Piping

San Francisco assignment

Recent design experience on petroleum refineries, chemical plants, or related projects. Compensation commensurate with ability. Liberal moving allowances.

Please write furnishing complete chronological experience record and salary history, also full details regarding education, salary desired, businesss and character references.

BECHTEL CORPORATION

220 Bush Street — San Francisco 4, Calif.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

Estimator, for firm doing extensive sewer, watermain, treatment plant, heavy construction. Must be graduate engineer or have extensive engineering background, with ability to obtain price and job information. Permanent position for qualified applicant. P-6074, Engineering News-Record.

Construction Foreman for firm engaged in extensive sewer, water main and treatment plant facilities. Permanent position in N. Y. State area. Only qualified applicants with broad experience. P-6595, Engineering News-Record.

Wanted: Instructor in engineering drawing and descriptive geometry. Salary $3600 for 9 month period. Dept. of Engr. Drawing, University of North Dakota, Grand Forks, North Dakota.

Civil Engineer for local road survey, design and construction. Prefer man with Illinois V. S. S. or Twp. M.F.T. experience. State education, experience, reference and salary expected. Hancock County Highway Dept. Carthage, Illinois.

Engineer—Experienced in bridge and general marine construction. Salary open. Address reply to P. O. Box 647, Savannah, Georgia.

Project Superintendent — Experienced in bridge and general marine construction. Salary open. Address reply to P. O. Box 647, Savannah, Georgia.

Help Wanted—Male structural steel detailers experienced, first class, permanent position—excellent opportunity—Box 955, New Haven, Conn.

Help Wanted—Male experienced graduate engineer for structural steel take-off and estimating—Box 955, New Haven, Conn. Will also consider application of recent graduate.

Draftsman—Experienced structural steel detailer and checker for building construction. Permanent. All employee benefits, paid vacation, insurance, etc. Submit resume and salary desired. Barber & Ross Company, 5th & V Sts., N. E. Washington, D. C.

Estimator For general contractor must have civil engineering background and at least five years' experience in the preparation of estimates for all phases of general construction. To apply furnish complete written resume of education and experience. P-7037, Engineering News-Record.

POSITIONS VACANT

Exp. steel detailer for consultant's office in Ohio. Submit experience resume to P-6897, Engineering News Record.

Civil Engineer for municipal street, sewer, and drainage work including survey, design and supervision. Forward resume, salary expected and earliest date available. P-7025, Engineering News-Record.

Permanent position for technically qualified civil or sanitary engineering graduate to assist divisional sales manager in market and application development for control instrumentation for water and sewage treatment installations. Experience with consulting engineers or sanitary utilities desirable. Reply by letter only to Mr. R. H. Babcock, The Foxboro Company, Foxboro, Mass.

Wanted: Civil engineering draughtsman, to take charge of small office in New Jersey Seashore resort. Top salary to qualified man. P-6995, Engineering News-Record.

Engineer-Superintendent for heavy excavation and grading on roads, airports, etc. Must be graduate engineer between 30-40 years old who has been actively engaged in actually doing this type of work for at least the last five years in the capacity. This is a permanent position with a substantial company in New York State. This opening has a real future for the right man. Salary open. P-7106, Engineering News-Record.

Construction Superintendent with aggressive home building firm operating all over the country. Experience with low cost housing and pre-cut construction. Substantial salary to the right man. Write stating experiences, recommendations and salary expected P.O. Box 627, Beuna Vista Station Miami 37, Florida.

Civil Engineer—Surveyor in established business, knowledge of land planning and subdivision calculations essential. Reply 3 Northwest Street, Annapolis, Maryland.

Assistant Engineers, civil engineering background. Training and experience in one or more of the following: design of subdivisions, sewers, water mains, streets, etc. for career positions in consulting engineer's office. Salary open. State education, experience, salary requirements and give references. Lester V. Johnson Associates 2309 Wilson Boulevard Arlington, Virginia.

Manager for a Midwest Construction Company in a City of approximately 100,000, doing municipal, industrial, highway grading and concrete work, and private work. Must be good organizer and pusher. Excellent opportunity for the right man. P-7111, Engineering News-Record.

(Continued on Page 179)

STRUCTURAL

DESIGNERS - DETAILERS - DRAFTSMEN

for work on

- **Bridges**
- **Industrial Buildings**
- **Expressways**
- **Pressure Vessels**

We desire engineers who want long term employment with ample opportunity for professional development and advancement. We have an excellent Employee Benefits Plan and sponsor a Blue Cross-Blue Shield Group. Paid vacations, holidays and sick leave. St. Louis offers extensive housing, educational and cultural facilities.

Please write fully to

SVERDRUP & PARCEL, INC.

Consulting Engineers

915 Olive — St. Louis 1, Mo.

Sales Engineers

A major steel company has need for sales engineers in its rapidly expanding prefabricated steel building division. Excellent opportunities for men 25 to 30 years old with engineering background and a desire for sales work. Attractive starting salary with company car, expenses and bonus plan. Openings in Baltimore, Philadelphia and Pittsburgh.

P-6903, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Steel Representative

Well-established Pittsburgh structural steel fabricating firm seeks consulting structural engineer or manufacturers' representative to represent it in the Chicago area. Prefer individual or company now handling one or two allied lines. This is not a salaried position. Do not apply if you are just looking for a job.

RW-7000, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Experienced Engineers, Designers Detailers, And Sales Engineer

Required for production Program on

CONCRETE

Batchers, Bins, Elevators, Silos, Aggregate Mixers, Central and Redi-Mix Plants, Portable and Stationary

BUCKETS

Clamshell, Dragline and Associated Types, Contractor and Industrial, hook-on and Electric

Company pays relocating expense; above average earning; salary and incentive. Age 28 to 50. M.E., E.E., C.E., background desired

Send complete resume to:

ERIE STRAYER COMPANY

Post Office Box 1031 Erie, Pennsylvania

DESIGN ENGINEERS

Graduate civil engineers for design of oil refinery plant facilities. Prefer men having professional engineer's license. Applicants must have a minimum of 4 years experience in design plus familiarity with drafting room procedures. These are career positions. Salaries commensurate with ability and experience. Liberal employee benefits. Plant located in Baltimore, Maryland.

Write Giving Resume' of Experience and Education

ESSO STANDARD OIL COMPANY
Box 5197, Highlandtown Sta.
Baltimore 24, Maryland

COMMERCIAL ENGINEER

A world-wide manufacturer of building products with headquarters in Pittsburgh is adding to its Commercial Engineering Department. The position requires an architectural or structural engineering graduate to maintain a product educational program presented to college and university undergraduates. Successful applicant must be willing to travel. Excellent opportunities for advancement plus a good salary, profit sharing, and liberal insurance and hospitalization benefits. Send a resume of education, experience, and salary expected to—

P-7054, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

DESIGN ENGINEERS

Permanent opportunities for qualified engineers experienced in design of:

STRUCTURAL STEEL
REINFORCED CONCRETE
HEAVY MACHINES

Applicable to design of Blast Furnaces, Ore Beneficiation Plants and similar heavy structures

also

PIPING
DESIGN AND LAYOUT

Applicable to Oil Refinery and Petro-Chemical Plant design

TOP EARNINGS—PENSION PLAN
MANY OTHER BENEFITS

Please contact or write:

Edward A. Kolner
ARTHUR G. McKEE & CO.
2300 Chester Ave. Cleveland 1, Ohio

HIGHWAY DESIGN ENGINEERS

Minimum of 3 years' experience in design of highways and expressways and associated engineering for work in our air-conditioned St. Louis office.

Employee Benefit Plan, paid vacations, and holidays, sick leave, Blue Cross.

Please write to or inquire at

SVERDRUP & PARCEL ENGINEERING COMPANY

1134 Locust St. St. Louis 1, Mo.
1625 Eye St., N.W. Washington 25, D. C.

WATER POLLUTION CONTROL ENGINEERS

California state government offers long range employment. Starting salaries $6,360 and $7,728 with periodic increases. Requirements are engineering degree and eligibility for California professional engineer's license, plus four to six years in water pollution control, sanitary, or chemical engineering, two of which must have been in supervisory capacity making public or government contacts. Interviews and civil service examinations in California only.

Write at once to Recruitment Section A,
State Personnel Board,
801 Capitol Avenue, Sacramento 14, Calif.

WANTED: ASS'T TRAFFIC ENGR.

For traffic engineering department just recently established. Salary range $537 to $620 a month with maximum salary obtainable through annual and longevity increases. Registration as a professional engineer required. Applications accepted until the needs of the service are filled.

Write Personnel Department
City Hall, Madison 3, Wis.

Estimator Wanted

Commercial and Industrial Construction

Must be experienced and fast in take-off and good knowledge of cost analysis. Unusual opportunity for ambitious young man to associate with a firm of established contractors on a good salary and percentage basis. Graduate engineer under 45 preferred.

P-7062, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTURAL ENGINEERS BRIDGE DESIGNERS

Excellent opportunity for Structural Engineers experienced in design of structural steel or reinforced concrete. Recent graduates and detail draftsmen also accepted. Good living conditions with insurance, pension and bonus plans.

Send complete outline of experince, date available and salary desired in first letter to:

GANNETT FLEMING CORDDRY & CARPENTER, INC.
Box 366, Harrisburg, Pa.

ENGINEERS

Layout Work—Steel Mill
Highway Engineers
for Outside Positions

Vacation, Sick Leave, Hospitalization Insurance Paid. Monthly Salary with Overtime. Positions for Regular Staff not Single Project.

P-7073, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

STRUCTUAL ENGINEERS

Engineering degree and responsible experience of at least three years in structural steel and reinforced concrete on bridges, buildings or heavy structures.

For established engineering consultants with international operations, located on gulf coast.

Send complete resume with name, address, and three references and salary requirements to:

P-7087, Engineering News-Record
330 W. 42nd St., New York 36, N. Y.

ENGINEERS
AND
DRAFTSMEN

OVERSEAS AIR BASE
DESIGN ENGINEERS
Degree plus Minimum 6 years exp.

DRAFTSMEN
Minimum 4 years experience

1 YEAR CONTRACT
PLUS SINGLE STATUS

Send complete resume to

EDW M. VAUGHN, N. Y.
Representative
WYATT C. HEDRICK
Architect Engineer
345 BROADWAY, NYC 13, NY

CHALLENGING POSITION

Man with good engineering background to run a concrete products and ready-mix plant, must be able to show results. A challenging position with commensurate salary.

P-6954, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

SERVICE MANAGER

For construction and industrial equipment dealer, Ohio. Must know tractors, shovels, compressors, and pumps. State age, salary, education, availability. Give detailed resume experience and references.

P-7089, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

POSITIONS VACANT
(Continued from page 177)

General Construction Superintendent—thoroughly experienced in commercial and institutional building construction. Capable of directing 8 million dollar project involving construction of motel units, administration building, information center and cafeteria in Williamsburg, Virginia. State detailed experience, availability date and expected salary. J. A. Fuller, Director of Employment, Williamsburg Restoration, Williamsburg, Virginia.

EMPLOYMENT SERVICE

Salaried personnel, $3,000-$25,000. This confidential service, established 1929, is geared to needs of high grade men who seek a change of connection under conditions assuring, if employed, full protection to present position. Send name and address only for details. Personal consultation invited. Jira Thayer Jennings, Dept. L, 241 Orange St., New Haven, Conn.

POSITIONS WANTED

Engineer—Registered BSCE 9 years experience construction, heavy equipment, contracts, industrial plant design, technical training programs, costs. Desires position with a future. Available August. PW-6990, Engineering News-Record.

Shovel and dragline operator 20 yrs. experience operating all makes on all types of construction. 8 yrs. on 80D Northwest. Highly mechanical inclined. Desire job as supervisor or full time operating. Will go any place. PW-6908, Engineering News-Record.

Civil Engineer—M.S.—Age 48—experienced in design of varied types of structures. Leader for large engineering organization or associate for ambitious engineering firm. Qualifications strong and attractive to consulting engineers. Abilities would appeal to oil, railroad, steel or chemical company. Interview can be arranged. PW-7084, Engineering News-Record.

Graduate professional engineer and licensed surveyor 6 years construction and civil engineering experience. Prefer Southern states. PW-7099, Engineering News-Record.

POSITIONS WANTED

Estimator-heavy const.-cost exp. in concrete, excavation, bridges, piers, drainage, and highways. Complete take-offs, pricing and sub pricing of bid. 10 yrs. exp. CE grad. N.Y.C. vicinity. PW-7102, Engineering News-Record.

Engineer—Bridge, structural—M.S. 15 years exceptional design experience in large fixed and movable bridges. 10 years in allied engineering fields covering harbor development, industrial plants, sewage plant structures, prestressed concrete structures. Prefer South or Southwest and University town. Your inquiries answered. PW-7085, Engineering News-Record.

Project Manager-const. supt.—on $1-5 million jobs. Proven managerial ability on highways, bridges, sewers, waterlines, piers, piles, railroads. PE 34 N.Y.C., L.I., Westch. PW-7103, Engineering News-Record.

Secretary—Correspondence, shop drawings, proposals, change orders etc. 11 years bldg. construction Washington or New York. PW-7049, Engineering News-Record.

Structural Engineer—Civil Graduate '41, registered La., Fla., Ill., A.M., ASCE. 14 yrs. experience on civil engineering projects (structural, sanitary, construction). Design and contract administration, field and office. Would like responsible position with engineering or industrial firm in South offering opportunity for professional advancement. PW-7050, Engineering News-Record.

POSITIONS WANTED

Sanitary, Civil Engineer, 38, grad., registered P.E.—15 years experience. Emphasis on all phases water and sewage systems, treatment plants, industrial waste, drainage. Must relocate to Middlewest. Desires responsible position. Present salary $8500. PW-7079, Engineering News-Record.

Project Manager or Superintendent. Graduate Engineer, young, aggressive, thoroughly experienced and capable of organizing and directing the estimating, bidding, buying and field construction of heavy industrial or chemical projects. Have following of craft and field supervision. Presently employed as gen. field supt. on chemical project in Southeast. Available Sept. 1st. PW-7113, Engineering News-Record.

Contractor's Chief Estimator—30 years top flight competitive experience. Assume full responsibility for bid preparation and usual chief engineer functions. Open for attractive proposition requiring thoroughly qualified man. PW-7115, Engineering News-Record.

PART TIME WORK WANTED

Municipal Engineer and land surveyor, N. J. license, wishes part time work in N. J. municipality under direction of their engineer. 25 yrs. experience municipal, railroad, waterfront improvements, power plants and heavy construction. Both field and office. PTWW-7105, Engineering News-Record.

SEARCHLIGHT SECTION

(Classified Advertising)

BUSINESS OPPORTUNITIES — EQUIPMENT - USED or RESALE

UNDISPLAYED —RATES— DISPLAYED

$1.80 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.
PROPOSALS, $1.80 a line an insertion.
BOX NUMBERS count as one line additional in undisplayed ads.
DISCOUNT of 10% if full payment is made in advance for four consecutive insertions of undisplayed ads (not including proposals).

The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page.
EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

Send NEW ADVERTISEMENTS to N. Y. Office, 330 W. 42nd St., N. Y. 36, N. Y. for August 4th issue closing July 25th

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36)
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

BUSINESS OPPORTUNITIES

Wanted to buy surveying and mapping business. BO-6792, Engineering News-Record, 520 N. Michigan Avenue, Chicago 11, Illinois.

Wanted Business Associate, capable of handling general contracting specializing in gunite & pressure grouting. Our firm well established, our equipment new modern and paid for plenty of work ahead. Required $25,000.00 or equivalent good faith. Must take charge & devote full time to company's business. Full information 1st. letter please. Location Miami Florida operation state wide. BO-7059, Engineering News-Record.

IDEAL BUSINESS COMBINATION

Located near Beverly Hills on South Side of Chicago. Brick paneled office. Five year old Georgian Brick Residence adjoining. With radiant automatic gas heat on 75 foot frontage. Landscaped ground with Cottage and three year old Brick (2300) square foot Building,—in rear. Many extras. Wonderful combination for convenience in Business and in home.

BO-7070, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

LEARN ESTIMATING

Complete Building Estimators Course, also Building Labor Calculator for practicing estimators. Thirty-fourth year serving the building industry. For free trial and all particulars write:

TAMBLYN SYSTEM
1420 Gilpin St. Denver 6, Colorado

Engineers—Foremen—Office Men

Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.

GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 So. 5th Ave. Lake Worth, Florida

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-third year.
WILSON *Engineering Corp*
College House Offices HARVARD SQ CAMBRIDGE MASS

WANTED

(4) SHIPYARD WHIRLEY CRANES

Model 28H 120K WASHINGTON
Model R20 or R25 AMERICANS
Model 200 or 240 COLBYS

Not interested in Units with National Security Clause attached

W-7018, Engineering News-Record — 330 W. 42st., New York 36, N. Y.

FOR SALE

New and Used material—Immediate delivery from stock Angles, Channels, I and WF Beams, especially for Contractors needs

H BEAMS

50 pcs	10" B P S	42#	48/60'
46 "	10" B P S	57#	40/67'6"
60 "	12" B P S	53#	60'
63 "	14" B P S	73#	60/75'

PILE SECTIONS

Phone or Wire your steel requirements

We are also interested in purchasing your surplus material.

We assure you our prices will be the best obtainable.

HY DRACHMAN STEEL CORP.

Warehouse
1423 34th Avenue, Astoria, New York
AStoria 8-4484 8-8023

Sales Office
563 East Tremont Ave., New York City, N. Y.
CYpress 9-5440

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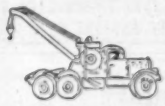

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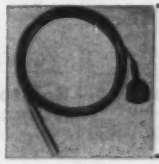

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EDITORIALS

Producers Are Key to Modular Design

ARCHITECTS AND CONTRACTORS enthusiastically endorsed modular coordination at a conference sponsored by the Building Research Advisory Board last December (ENR Dec. 16, 1954, p. 24). This action encourages the belief that it is not building designers or builders who are responsible for the slow progress being made toward universal adoption of modular design but the producers of building materials who have not converted their products to modular sizes. So, if headway is to be made, more producers must be persuaded to change to modular products, as was pointed out in an editorial in ENR Dec. 23, 1954, p. 64.

One way to speed conversion might be to hold another conference on modular coordination at which large producers whose products do not now conform to modular dimensions would be asked to participate in a panel discussion on ways and means. Out of such a conference might come agreement on a cutoff date after which the large producers would standardize only on modular sizes. If the large manufacturers will agree on such a cutoff date, the smaller ones will be quick to fall in line. Then building designers will have no choice but to specify modular materials for structures to be built after that date.

The Building Research Advisory Board seems to be the logical group to sponsor such a conference as a follow up to its December meeting. But if BRAB does not see fit to do so, the American Institute of Architects, the Producers Council or some other professional organization concerned with the welfare of the building industry could be the sponsor. Programs for the coming year are now being set up by these organizations. Now is the time, therefore, to urge their program committees to schedule a conference to speed up conversion of building products to modular sizes. Before the enthusiasm for modular coordination built up by the December conference fades away, the materials producers should be urged to do more to make modular design possible.

More Laws to Hamper Construction

CHALK UP ONE MORE formwork failure to inadequacy of bracing. The district attorney of New York County reports that the collapse of the New York Coliseum formwork on May 9 was "caused by the inadequacy of the temporary supporting structure under the pressure of a horizontal or oblique thrust on the main exhibition floor," which was created by the concreting operation (ENR July 14, p. 23). He states: "If there had been sufficient diagonal, horizontal and end bracing of the temporary supporting structure, the collapse could have been prevented entirely, or at worst its area held to a minimum."

The district attorney then went on to offer some thought-provoking recommendations for laws to prevent similar mishaps in the future—thought provoking because New York City and perhaps other communities may be tempted to enact such laws.

The district attorney requested that the city building code be amended to require falsework to be designed by a licensed engineer and that an affidavit be filed with the building department stating that construction will comply with the plan submitted. He also asked that use of motorized buggies for placing concrete be barred without special permission from the city's Board of Standards and Appeals.

Unfortunately, these requests have a certain appeal because, despite repeated warnings to contractors of the necessity for adequately bracing structures and falsework during construction, erection failures due to the omission of bracing continue to be reported from various parts of the country with disturbing frequency. Yet, while these laws might reduce the number of falsework failures, they also would slow up construction and increase costs. It would be far better for contractors if they would make falsework design by licensed engineers a general practice, and thus eliminate the need for a law to this effect.

The recommendation that falsework be designed by licensed engineers is basically an excellent one. Contractors who do not ordinarily do so will find it wise to engage an engineer experienced in this field to design formwork and its supports—not only because the resulting temporary structure will be safe but because the design might well be more economical than the one they would use. However, the supplementary legal requirement for enforcement purposes—filing of erection drawings with the building department—would be an added chore and could result in delays. Also, outlawing motorized buggies, which would not be necessary if the falsework were properly designed to accommodate the equipment, will slow up construction.

There are already too many laws hamstringing construction, which would not be necessary if contractors would adopt safety measures voluntarily. Must there be more laws?

It Must Have Been the Heat

THE HOUSE APPROPRIATIONS COMMITTEE last week denied funds for construction of the new Air Force Academy on the ground that the design was too modernistic, and that Frank Lloyd Wright thought so too! The next obvious step is to commission Mr. Wright to make a "conservative" design. At least that would be one sure way for the committee to come to the conclusion that its foray into architectural criticism was a mistake—attributable perhaps to the heat.

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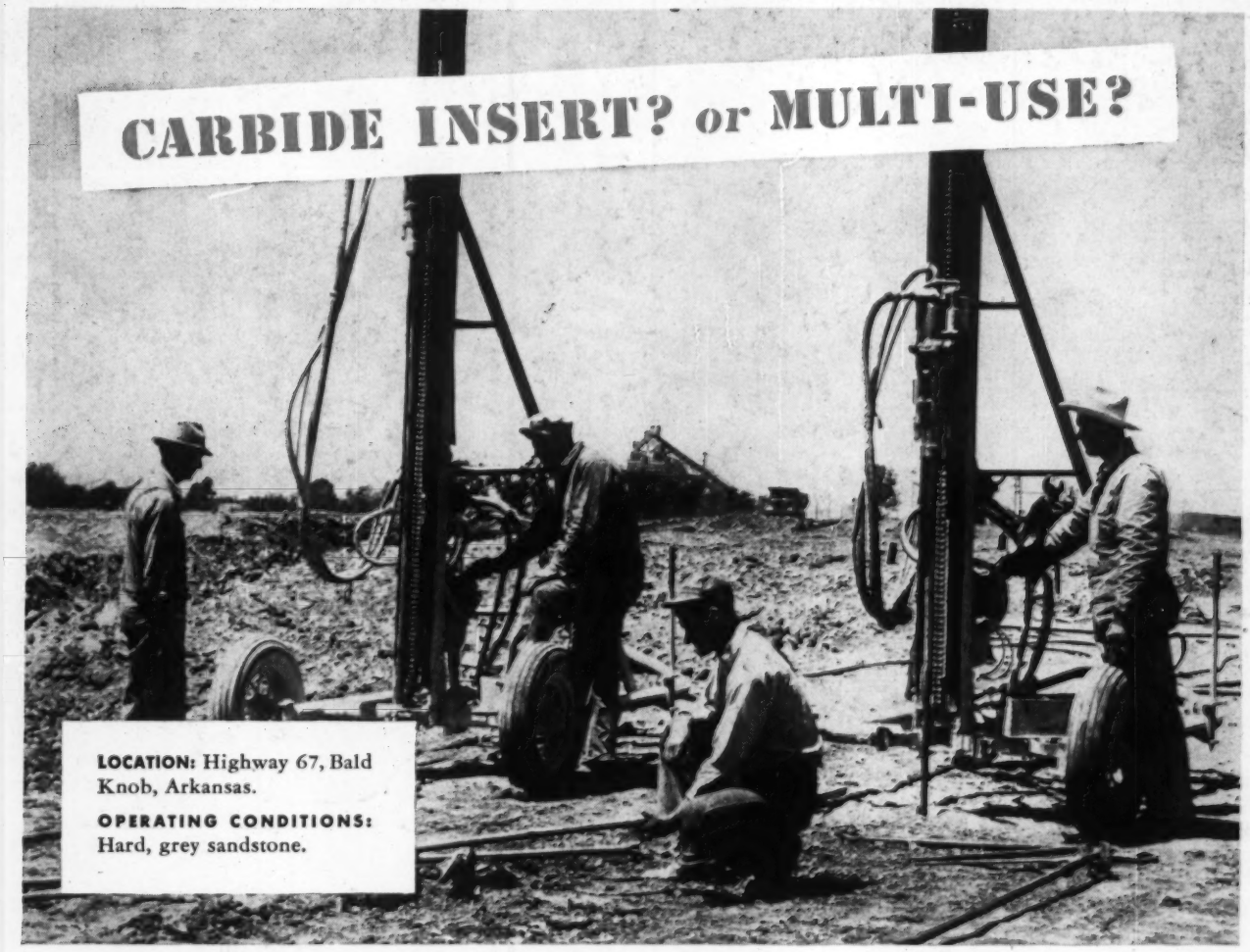

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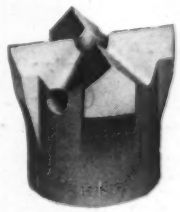

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